Supreme Court, U.S.
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In The Supreme Court of the United States

October Term 1996

ARDITH CAVALLO,

Petitioner,

v.

STAR ENTERPRISE; TEXACO REFINING AND MARKETING (EAST), INCORPORATED; and SAUDI REFINING, INC.,

Respondents.

ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FOURTH CIRCUIT

Petition for A Writ of Certiorari

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104pp

QUESTION PRESENTED

Whether in reviewing the district court's application of *Daubert* v. *Merrill Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), to exclude expert scientific testimony, the Fourth Circuit erroneously applied the most highly deferential abuse of discretion standard of review.

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PETITION FOR A WRIT OF CERTIORARI

Ardith Cavallo respectfully seeks a writ of certiorari to review that part of the judgment of the United States Court of Appeals for the Fourth Circuit in this matter, which, based on the district court's exclusion of expert scientific testimony, affirmed a summary judgment dismissing Count I of her complaint. This case and *General Electric Co. v. Joiner* (No. 96-188), in which certiorari was granted on March 17, 1997, present the same major issue. Either consideration with No. 96-188, or deferral of a ruling on this Petition until after decision in No. 96-188 is appropriate.

OPINIONS BELOW

The opinion of the court of appeals (A.1)[1] is reported at 100 F.3d 1150. The opinion of the district court (A.25) is reported at 892 F.Supp. 756. The district court orders in accordance with its opinion (A.23,68) are unreported. An earlier district court memorandum opinion and order dismissing three counts of the complaint not involved in this Petition (A. 69) is unreported. The orders of the district court denying reconsideration (A.74-78) are not officially reported. The order of the court of appeals (A.79) denying rehearing and a suggestion for rehearing *in banc* is not officially reported.

JURISDICTION

The judgment of the court of appeals was entered November 20, 1996. A timely petition for rehearing with a suggestion for rehearing *in banc* was denied on December 19,

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[1] "A." references are to the Appendix, which is bound in this volume.

1996. Jurisdiction of this Court is invoked pursuant to 28 U.S.C. 1254(1).

RULE INVOLVED

Rule 702 of the Federal Rules of Evidence provides:

> **Testimony by Experts.** If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise.

STATEMENT

I. Factual Background

This case, instituted under 28 U.S.C. 1332(a)(1), arises from ongoing problems with a petroleum tank farm located in Fairfax County, Virginia, in close proximity to a residential and shopping area.[2] Around Midnight on December 9, 1991, Ardith Cavallo left a restaurant in a shopping center adjacent to the tank farm. She and her husband walked to their car. They smelled oil, and Mrs. Cavallo began to experience various physical reactions. Later it was learned that Star negligently had spilled 34,000 gallons of aviation jet fuel ("AvJet").

Mrs. Cavallo's symptoms worsened. She saw various physicians and received varying diagnoses. Ultimately, she

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[2] The facility is operated by Star Enterprise, a joint venture partnership between Texaco Refining and Marketing (East), Incorporated, and Saudi Refining, Inc. It has been the subject of considerable litigation.

was diagnosed with Reactive Airways Disfunction Syndrome ("RADS"), a medically recognized condition which creates a heightened sensitivity to chemicals, and which is caused by an initial "insult" or exposure to high concentrations of chemicals, such as those in petroleum products.

II. Proceedings Below

Mrs. Cavallo sued, *inter alia*, for personal injuries caused by the spill.[3] Summary judgment was entered against her based on the grant of a motion *in limine* excluding the testimony of her proposed expert witnesses -- Joseph A. Bellanti, M.D., her treating physician, who is head of the Department of Allergy and Immunology at Georgetown University Medical Center, and Dr. David Monroe, a toxicologist -- as to the sensitizing effect of the 1991 spill upon her.

The district court held that Dr. Bellanti, who, as stated above, is a preeminent allergist and immunologist, and Mrs. Cavallos treating physician, could not testify as to the etiology of Mrs. Cavallo's illness because he did not follow the methodology of toxicology in reaching his conclusions (A.59-62). It also held the testimony of Dr. David Monroe, a toxicologist, inadmissible because it believed his methodology flawed in that he could not cite specific studies involving AvJet (A.38-48, 54).

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[3] The complaint contains four counts. This Petition relates to Count I, only. The district court dismissed the entire action (A.3). The November 20, 1996 court of appeals' decision to which this Petition relates reversed and remanded an FRCP Rule 12(b)(6) dismissal of the other three counts which relate to ongoing personal injuries to Mrs. Cavallo and damage to the Cavallos' residential property located near the Star facility (A.21-22). Lawrence Cavallo, Ardith Cavallo's husband, who is not a party in this Petition, also is a plaintiff seeking property damages in two of the remanded counts.

The above conclusions were based on the district court's misinterpretation of this Court's decision in *Daubert v. Merrill Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), that *Daubert* tightened the rules for admission of expert testimony, stating (A.66):

> Prior to *Daubert*, courts presented with this situation [admissibility of expert scientific testimony] may have been more inclined to admit the expert testimony and allow the jury, aided by vigorous cross-examination, to sort out the relative reliability of opposing opinions. But *Daubert* recognized the danger in this approach.* * * Given this, *Daubert* assigned district courts a more rigorous role to play in ferreting out expert opinion not based on scientific method.

The Fourth Circuit affirmed. It ruled that the district court's call was a "close" question, applying the most deferential abuse of discretion standard of abuse of discretion standard of review possible, and rejecting as the proper standard of review a less deferential standard of review adopted by the Third Circuit in *In re Paoli R.R. PCB Litigation*, 35 F.3d 717 (3d Cir. 1994), *certiorari denied sub nom. General Electric Co. v. Ingram*, __ U.S. __, 115 S. Ct. 1253 (1995), by the Eleventh Circuit in *Joiner v. General Electric Co.*, 78 F.3d. 524 (11th Cir. 1996), *certiorari granted* (March 17, 1997), No. 96-188,[4] and by the District of

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[4] *Joiner* has three opinions. The majority adopts the *Paoli* approach (*see, infra*), with the concurring opinion (78 F.3d at 534-535) suggesting that district judges appoint "an expert under Fed. R. Evid. 706, to assist the court in evaluating scientific evidence." The dissent believes that "more precise explanation of the standard of review is required", namely, that there are "[t]hree standards in reviewing admissibility of expert opinion; (1) trial court's fact finding reviewed for clear error; (2)

Columbia Circuit in *Ambrosini v. Labarraque*, 966 F.2d 1464, 1469 (D.C. Cir. 1992), and 101 F.3d 129, 131 (D.C. Cir. 1996). (A.6-7, 21).[5] In so doing, the Fourth Circuit affirmed as a proper exercise of district court discretion a decision made based on an erroneous district court view that *Daubert tightened* the standards for admissibility of expert testimony (*see*, *supra*, and A.66), even though the circuit court itself recognized that *Daubert* liberalized the standards for admission of such testimony (A.18-19), and that the district court's approach was "restrictive" (A.21).[6]

REASONS FOR GRANTING THE WRIT

I. *Daubert*

In *Daubert*, this Court held that the standard for admissibility of expert scientific testimony no longer would be that of "general acceptance" of the basis of the proposed expert's opinion. The Federal Rules of Evidence, with their liberal approach and preference for admissibility of evidence, made the "general acceptance" test enunciated 70 years earlier in *Frye v. United States*, 293 F. 1013, 1014 (D.C. Cir. 1923), not the exclusive test for admissibility under the Federal Rules of Evidence. 509 U.S. at 587-589. Instead, the Court held that district judges should engage in a "flexible" inquiry considering, by way of example, a number of non-exclusive factors. 509 U.S. at 592-594.[7] However, the Court, while

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trial court's ruling whether opinion is scientific knowledge is question of law requiring plenary review; and (3) trial court's ruling whether opinion assists the trier of fact is reviewed for abuse of discretion." 78 F.3d at 535.

[5] Only *Paoli* is discussed in the Fourth Circuit's opinion.

[6] As stated, *supra*, even being most differential to the trial court's rulings, the court of appeals called the question "close."

[7] Factors listed by the Court are whether the proposed expert has scientific knowledge that will assist the tier of fact (including on inquiry of

announcing a significant change in the law, did not consider with this new approach whether in reviewing district court rulings on admissibility the standard of review would remain that stated 31 years earlier in *Salem v. United States Lines Co.*, 370 U.S. 31, 35 (1962), that "the trial judge has broad discretion in the matter of the admission or exclusion of expert evidence, and his action is to be sustained unless manifestly erroneous." To support the just quoted statement in *Salem*, the Court cited *Spring Co. v. Edgar*, 99 U.S. 645, 658 (1879). The *Edgar* standard of review, unexamined in *Daubert*, predates *Frye* by 44 years, and predates *Daubert* by well over a century. It was formulated and applied long before, and without regard to, the Federal Rules of Evidence that are the underpinnings of *Daubert*.

II. Conflict In The Circuits On An Important Question

A. Importance

Expert testimony is becoming more and more critical in an increasingly technical world. Ever more cases turn on its admissibility. Accordingly, both the standards for admissibility in the trial courts, and the standard of review applied by the courts of appeals to district court rulings on admissibility under the *Daubert* criteria must be as uniform as possible. Currently, such is not the case, and this Court should resolve now the circuit conflicts as a major step toward achieving both ends.

This uniformity concern is shared by both plaintiffs and defendants. The Court, on March 17 1997, granted the petition of defendants General Electric, *et al.*, in No. 96-188 to

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the validity of the methodology), whether the theory has been tested, whether it has been subject to peer review, the potential error rate, and possibly "general acceptance." *Id.*

review the Eleventh Circuit's decision in *Joiner*.[8] General Electric's Petition appropriately states at 6:

> The issue of standard of review is fundamental and surely will have to be resolved by this Court. It is difficult to see any reason why the time for review has not now come, particularly when the disparity of review standards among the Circuits means that judgments are being reversed in some Circuits that would be affirmed in others.[9]

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[8] Petitioners in No. 96-188 filed a Second Supplemental Brief calling attention to, *inter alia*, the Fourth Circuit's decision in this case.

[9] In this case, the courts below erred. Dr. Bellanti testified to a reasonable degree of medical certainty that Mrs. Cavallo's condition was caused by her exposure to AvJet. There "need not be a clearly established . . . animal or epidemiological studies before a doctor can testify that, in his opinion, a relationship [between product exposure and physical harm] exists . . . [a]s long as the basic methodology to reach such a conclusion is sound, such as use of tissue samples, standard tests, and patient examination." *Ferebee v. Chevron Chemical Co.*, 756 F.2d 1529, 1535-1536 (D.C. Cir. 1984). And, "a doctor does not always have to employ all of these techniques in order for the doctor's differential diagnosis to be reliable." *Paoli, supra*, 35 F.3d at 759. Dr. Bellanti employed standard medical techniques and tests to diagnose Mrs. Cavallo's illness, and accepted differential diagnosis to determine its cause.

Dr. Monroe was not required to cite specific epidemiological studies regarding AvJet, or a specific study finding long term effects from exposure to specific levels of many of the compounds in AvJet. The ruling of the district court is inconsistent with cases from the Fourth Circuit, as well as with other circuits. The decision conflicts with *Benedi v. McNeil -- P.P.C., Inc.*, 66 F.3d 1378, 1384 (4th Cir. 1995) ("we do not read *Daubert* as restricting expert testimony to opinions that are based solely on epidemiological data), and with *City of Greenville v. W.R. Grace Co.*, 827 F.2d 975, 980 n.2 (4th Cir. 1987) (extrapolation from effects of high levels of exposure to low levels permissible, and liability need not wait until people actually get sick from low level exposure). It also is at odds with *Ferebee, supra*, 736 F.2d at 1535 ("a cause and effect relationship need not be clearly established by epidemiological studies before a doctor can testify

B. The Conflicts

Nine circuits hold that trial court determinations to exclude expert testimony are to be reviewed either under a traditional and highly deferential abuse of discretion standard, or for "manifest error."[10] Three circuits -- the Third, the Eleventh, and the District of Columbia Circuit -- take the position that when exclusion of expert scientific testimony results in either a summary judgment or a directed verdict, the review is more searching and less deferential than other rulings regarding admissibility of evidence. In *Paoli*, the Third Circuit described this review as a "hard look." 35 F.3d at 749. It reasoned that the liberal thrust of the Federal Rules of Evidence, their preference for admissibility, and the fact that the appellate court is in as good as the trial court to make the evaluation, require a more stringent and less deferential standard of appellate review. *Id.* at 749-750.

The Eleventh Circuit in *Joiner* adopted the *Paoli* standard of review, writing that, "[b]ecause the Federal Rules of Evidence governing expert testimony display a preference for admissibility, we apply a particularly stringent standard of review to the trial judge's exclusion of expert testimony" (78 F.3d at 529). The District of Columbia Circuit has ruled similarly, stating that review of a summary judgment is *de novo*, and "that 'when a court denies the right to have a jury decide a disputed issue, especially one of a scientific nature, its

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that, in his opinion, such a relationship exists"), and *Wells v. Ortho Pharmaceutical Corp.*, 788 F.2d 741, (11th Cir. 1986), *rehearing in banc denied*, 795 F.2d 89 (1986), *certiorari denied*, 479 U.S. 950 (1986) ("Plaintiffs' burden . . . did not necessarily require them to produce scientific studies showing a statistically significant association . . . [of] malformations in a large population").

See n. 13, *infra*.

[10] These two standards are essentially the same, described by different terminology. *See Cooter & Gell v. Hartmarx Corp.*, 496 U.S. 384, 401 (1990) (in reviewing findings of fact "the abuse of discretion and clearly erroneous standards are indistinguishable").

reasons for doing so must be strong.'" *Ambrosini v. Labarraque*, 101 F.3d 129, 131 (D.C. Cir. 1996), quoting from *Ambrosini v. Labarraque*, 966 F.2d 1464, 1469 (D.C. Cir. 1992).[11] *But see Joy v. Bell Helicopter Textron, Inc.*, 999 F.2d 549, 567 (D.C. Cir. 1993) (trial judges are to be allowed "broad discretion" in determining admissibility of expert scientific testimony).

The positions of the circuits, other than the Third, Fourth, Eleventh, and District of Columbia Circuits are summarized below:[12]

1. The "Manifestly Erroneous" Standard

Six Circuits state the standard of review as "manifestly erroneous."

First Circuit -- "Because gauging an expert witness's usefulness is almost always a case-specific inquiry . . . a trial judge's rulings in this sphere should be upheld 'unless manifestly erroneous.'" *United States v. Sepulveda*, 15 F.3d 1161, 1183 (1st Cir. 1993), citing *Salem v. United States Lines Co., supra*, 370 U.S. at 35. *See also United States v. Shay*, 57 F.3d 126, 132 (1st Cir. 1995) ("district court's decision to admit or exclude expert testimony is entitled to great deference").

Second Circuit -- "A decision to allow expert testimony is within the broad discretion of the trial judge and 'is to be sustained on appeal unless manifestly erroneous.'" *United States v. Daccarett*, 6 F.3d 37, 58 (2d Cir. 1993), quoting *United States v. Brown*, 776 F.2d 397, 400 (2d Cir.

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[11] Petitioners in No. 96-188 believe the District of Columbia Circuit applies an "abuse of discretion" standard of review. In light of the recent decision in *Ambrosini*, we believe that is an inaccurate statement.

[12] The summary in points 1 and 2, following, is taken in part from the Petition in No. 96-188.

1985), *certiorari denied*, 475 U.S. 1141 (1986); *McCullock v. H.B. Fuller Co.*, 61 F.3d 1038, 1042 (2d Cir. 1995).

Fifth Circuit -- The Fifth Circuit holds that under *Daubert* "a trial court is accorded a wide berth to determine the admissibility of expert testimony." *United States v. 14.38 Acres of Land, Sit. in Leflore Cty. MS*, 80 F.3d 1074, 1077 (5th Cir. 1996). "A trial court's ruling regarding admissibility of expert testimony is protected by an ambit of discretion and must be sustained unless manifestly erroneous." *Rosada v. Deters*, 5 F.3d 119, 124 (5th Cir. 1993), quoting *Christophersen v. Allied-Signal Corp.*, 939 F.2d 1106, 1109 (5th Cir. 1991), *certiorari denied*, 503 U.S. 912 (1992). *See also Pedraza v. Jones*, 71 F.3d 194, 197 (5th Cir. 1995) ("district court did not abuse its discretion in refusing to consider the affidavit as expert testimony"); *Eiland v. Westinghouse Elec. Corp.*, 58 F.3d 176, 180 (5th Cir. 1995) ("manifestly erroneous").

Sixth Circuit -- In applying *Daubert*, "[a] trial court 'has broad discretion in the matter of the admission or exclusion of expert evidence, and [the court's] action is to be sustained unless manifestly erroneous.'" *American & Foreign Ins. Co. v. General Elec. Co.*, 45 F.3d 135, 137 (6th Cir. 1995), quoting *Salem v. United States Lines Co., supra*, 370 U.S. at 35; *United States v. Bonds*, 12 F.3d 540, 554 (6th Cir. 1993) ("the trial court's actions are to be sustained unless 'manifestly erroneous'"), quoting *United States v. Green*, 548 F.2d 1261, 1268 (6th Cir. 1977). *But see Cook v. American S.S. Co.*, 53 F.3d 733, 738 (6th Cir. 1995) (review of Rule 702 decisions may involve three different standards of review). *See* n. 4, *supra*, and pp. 12-13 , *infra*.

Seventh Circuit -- Under *Daubert*, "we will not disturb the district court's findings unless they are manifestly erroneous." *Bradley v. Brown*, 42 F.3d 434, 436-37 (7th Cir. 1994); *Deimer v. Cincinnati Sub-Zero Prods., Inc.*, 58 F.3d 341, 344 (7th Cir. 1995).

Ninth Circuit -- "We review *de novo* the district court's interpretation of the Federal Rules of Evidence and will uphold its decision to exclude expert testimony unless it is 'manifestly erroneous.'" *Claar v. Burlington N.R.R.*, 29 F.3d 499, 500-01 (9th Cir. 1994), quoting *Rogers v. Raymark Industries, Inc.*, 922 F.2d 1426, 1429 (9th Cir. 1991); *United States v. Rincon*, 28 F.3d 921, 923 (9th Cir. 1994), *certiorari denied*, __ U.S. __, 115 S. Ct. 605 (1994). *See also Lust v. Merrell Dow Pharmaceuticals, Inc.*, 89 F.3d 594, 597 (9th Cir. 1996) ("[t]he abuse of discretion standard applies to an F.R.E. 702 ruling even though the ruling was dispositive of a motion for summary judgment").

2. The Deferential "Abuse of Discretion" Standard

Without using the phrase "manifestly erroneous", two circuits, in addition to the Fourth, review for abuse of discretion, emphasizing that great deference is to be accorded trial court rulings on admissibility.

Eighth Circuit -- The Eighth Circuit holds that district court exclusions of expert testimony under *Daubert* will be affirmed unless there was "a clear abuse of discretion." *Gier v. Educational Service Unit*, 66 F.3d 940, 944 (8th Cir. 1995); *Ventura v. Titan Sports, Inc.*, 65 F.3d 725, 735 (8th Cir. 1995), *certiorari denied*, __ U.S. __, 116 S. Ct. 1268 (1996); *Watkins v. Schriver*, 52 F.3d 769, 771 (8th Cir. 1995) ("[t]he district court's ruling as to the exclusion of such testimony will be reversed only for an abuse of discretion").

Tenth Circuit -- Admissibility rulings under *Daubert* "will be disturbed only for a clear abuse of discretion." *United States v. Davis*, 40 F.3d 1069 (10th Cir. 1994), *certiorari denied*, __ U.S. __, 115 S. Ct. 1387 and 1806 (1995). *Accord: Duffee v. Murray Ohio Manufacturing Co.*, 91 F.3d 1410, 1411 (10th Cir. 1996). *But see Compton v. Subaru of America, Inc.*, 82 F.3d 1513, 1517-1518 (10th Cir. 1996)

(once it is determined that district court properly applied *Daubert*, reversal may be only for abuse of discretion; however, because "of the 'liberal thrust of the Federal Rules', [citation omitted] we have instructed, 'the touchstone of admissibility . . . is helpfulness to the trier of fact'").

3. Different Standards for Various Parts of Admissibility Rulings

The conflict and confusion in the circuits goes beyond generalized and broad statements of the applicable standard of review. There is disagreement regarding whether different standards of review apply to the various parts of the *Daubert* analysis. In this case, the Fourth Circuit made no distinction between the standard of review to be utilized in reviewing the district court's decision on the validity of the methodology employed by the proposed scientific experts and that to be used for evaluating a determination of whether the testimony would be helpful to the jury. In other words, it held that a highly deferential abuse of discretion standard of review should be applied to *all aspects* of a trial court's *Daubert* rulings.[13] Other circuits have ruled similarly. *See, e.g., Duffee*

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[13] The Fourth Circuit erred no matter how stringent the standard of review. The trial court made its ruling based on an erroneous view of the law, namely that *Daubert* was intended to *restrict* admissibility of expert scientific testimony, stating erroneously (A.66) that "[p]rior to *Daubert* courts presented with this situation may have been more inclined to admit the expert testimony and allow the jury, aided by vigorous cross examination, to sort out the relative reliability of opposing expert opinions." *Daubert* holds exactly the opposite -- that the Federal Rules of Evidence *liberalize* admissibility. *See Daubert*, 509 U.S. at 596 ("conventional devices, ["vigorous cross examination, presentation of contrary evidence, and careful instruction on the burden of proof"] rather than wholesale exclusion . . . are the appropriate safeguards"). The "district court . . . necessarily . . . abuse [d] its discretion [by] bas[ing] its ruling on

v. Murray Ohio Manufacturing Co., supra, 91 F.3d at 1411; *United States v. Daccarett, supra*, 6 F.3d at 59; *American & Foreign Ins. C. v. General Elec. Co., supra*, 45 F.3d at 137, 139. Indeed, it is safe to say that most courts that use either the "manifestly erroneous", or the abuse of discretion standard of review apply that standard to all aspects of district court *Daubert* rulings.

By contrast, as Judge Smith wrote in his dissent in *Joiner* (*see* n. 4, *supra*), and as he believes should be the case, other circuit courts have applied different standards of review to the various parts of the *Daubert* screening process -- fact finding reviewed for clear error, or whether clearly erroneous; methodology determination reviewed as question of law, *i.e.*, plenary or *de novo* review; ruling regarding assistance of evidence to trier of fact reviewed for abuse of discretion. That multi-faceted standard has been used by some courts. *See, e.g., Cook v. American S.S. Co., supra*, 53 F.3d at 738. *Compare Paoli, supra* ("A district court's ruling on admissibility of evidence is reviewed for abuse of discretion, but to the extent the district court's ruling turns on an interpretation of a Federal Rule of Evidence review is plenary'", quoting *DeLuca v. Merrill Dow Pharmaceuticals, Inc.*, 911 F.2d 941, 944 (3d Cir. 1994)).

III. The Need For Clarification

In 1962, this Court held in *Salem v. United States Lines Co., supra*, that the standard of review for rulings on admission or exclusion of expert testimony was abuse of discretion. *Salem* was decided when *Frye's* "general acceptance" was the sole determinant of admissibility. "General acceptance" did not mandate *Daubert's* detailed

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an erroneous view of the law." *Cooter & Gell v. Hartmarx Corp., supra*, 496 U.S. at 405.

multi-part inquiry. Because of the change made by *Daubert* in the task to be undertaken by district judges, it is appropriate that the standard of review in the courts of appeals also be reexamined.

Daubert was a significant change in the law. Without clarification of other related aspects of law that *Daubert* necessarily calls into question (as evidenced by the circuit conflicts), the job remains only partly done. The issue and consequences of this incompleteness, which increasingly impact the entire Federal Judicial System, are much too important and too far reaching to be left in flux. Whether a traditional and highly differential abuse of discretion standard applies, or to what part, or parts, of *Daubert* rulings it applies, or whether the liberal thrust of the Federal Rules dictates something else, especially in cases of exclusion, is a question that must be answered by this Court.[14] The circuit conflicts will not resolve themselves. Further uncertainty as to both the standard of review and its application is unwarranted. Uniform standards must be set before the conflicts and confusions become even more widespread. Additional delay in doing so can only make the task more complex and difficult.

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[14] We note that rulings on admissibility of expert scientific testimony involve analysis of considerations inapplicable to other evidentiary rulings. A different standard therefore seems appropriate, especially since some of the determinations are questions of law.

CONCLUSION

For the foregoing reasons, certiorari should be granted, and this case should be considered with No. 96-188. Alternatively, ruling on this Petition should be postponed until after decision in No. 96-188.

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APPENDIX

PUBLISHED

UNITED STATES COURT OF APPEALS
FOR THE FOURTH CIRCUIT

No. 95-2540

ARDITH CAVALLO,
Plaintiff-Appellant,

and

LAWRENCE CAVALLO,
Plaintiff,

v.

STAR ENTERPRISE; TEXACO REFINING
AND MARKETING (EAST), INCORPORATED;
SAUDI REFINING, INC.,
Defendants-Appellees.

No. 95-2541

LAWRENCE CAVALLO,
Plaintiff-Appellant,

and

ARDITH CAVALLO,
Plaintiff,

v.

STAR ENTERPRISE; TEXACO REFINING
AND MARKETING (EAST), INCORPORATED;
SAUDI REFINING, INC.,
Defendants-Appellees.

Appeals from the United States District Court
for the Eastern District of Virginia, at Alexandria.

T. S. Ellis, III, District Judge;
Albert V. Bryan, Jr., Senior District Judge.

(CA-94-1499-A)

Argued: April 3, 1996
Decided: November 20, 1996
Entered: November 20, 1996

Before ERVIN, Circuit Judge, LAY, Senior Circuit Judge of the United States Court of Appeals for the Eighth Circuit, sitting by designation, and TRAXLER, United States District Judge for the District of South Carolina, sitting by designation.

Affirmed in part and reversed and remanded in part by published opinion. Judge Ervin wrote the opinion, in which Senior Judge Lay and Judge Traxler joined.

COUNSEL

ARGUED: Allen Huberth Sachsel, Fairfax, Virginia, for Appellants. Richard Edward Wallace, Jr., HOWREY & SIMON, Washington, D.C., for Appellees. **ON BRIEF:** Mark C. Hayes, LAW OFFICE OF MARK C. HAYES, P.C., Alexandria, Virginia; Donnell R. Fullerton, DONNELL R.

FULLERTON, P.C., Fairfax, Virginia; John E. Drury, LAW OFFICE OF JOHN E. DRURY, Washington, D.C., for Appellants. Anthony F. King, Nancy C. Libin, HOWREY & SIMON, Washington, D.C., for Appellees.

OPINION

ERVIN, Circuit Judge:

Ardith and Lawrence Cavallc sued Star Enterprise,[1] which operates a petroleum distribution terminal located near their home, alleging various damages from an underground petroleum release in 1990 and a fuel spill in 1991. Their complaint included four causes of action: Count I-- "Negligence with Respect to AVJet Fuel Spill"; Count II-- "Negligent Petroleum Release and Negligent Abatement and Remediation of the Petroleum Release"; Count III--"Common Law Trespass"; and Count IV-- "Liability Under the State Water Control Law." The district court dismissed Counts II, III, and IV under Fed. R. Civ. P. 12(b)(6), holding that they were barred by statutes of limitation and federal preemption. After discovery, the court granted Star's motion for summary judgment on Count I.

The Cavallos appeal. They contend that the district court applied an incorrect statute of limitation, misconstrued federal preemption doctrine, and erred in excluding the testimony of two of their experts.[2] We agree with the Cavallos

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[1] Star Enterprise is a joint venture partnership between Texaco Refining and Marketing (EAST), Inc., and Saudi Refining, Inc. We refer to the defendants collectively as "Star."

[2] In addition to the questions they raise in their opening brief, the Cavallos add two new arguments in their Reply Brief: (1) that the statute of limitation applicable to their trespass and statutory claims is five years

that the Complaint and the EPA Orders provide insufficient information to determine whether their claims are preempted. Thus we reverse the court's dismissal of Count II, that portion of Count III containing the loss of use and enjoyment claim, and Count IV and remand for further proceedings. We uphold the dismissal of that portion of Count III containing the personal injury claim, however, even though the court rested its decision on preemption, because it fails to state a claim under Virginia law. And we affirm the court's summary judgment on Count I, finding that the district court acted within its discretion by excluding the expert testimony.

I

Star's distribution terminal ("the Tank Farm") is located in Fairfax, Virginia, less than a mile west of the Cavallos' home. It includes office and warehouse space, a truck loading rack, underground storage tanks holding up to forty thousand gallons, and above-ground storage tanks holding over seventeen million gallons. Drainage on the site is

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rather than two years, and (2) that "[t]he district court erred by failing to convert Star's Rule 12(b)(6) motion into a motion for summary judgment and by taking judicial notice of incomplete documents." The Cavallos abandoned the statute of limitation issue at oral argument, stating that they were not appealing it but might ask the district court to reconsider the question if we remand. Also at oral argument, the Cavallos noted that they had raised the conversion issue before the district court.

Under the decisions of this and the majority of circuits, an issue first argued in a reply brief is not properly before a court of appeals. *See Hunt v. Nuth*, 57 F.3d 1327, 1338 (4th Cir. 1995) (citing *United States v. Caicedo-Llanos*, 960 F.2d 158, 164 (D.C. Cir. 1992)), *cert. denied*, 116 S. Ct. 724 (1996); 9 James Wm. Moore, *Moore's Federal Practice* ¶ 228.02[2-3] (1995) ("The case law is to the effect that the appellant cannot raise new issues in a reply brief . . . ."). That the question was raised in the district court is immaterial. The Cavallos' omission of the issue from their initial brief denied Star an opportunity to respond, so considering it now "would be unfair to the appellee and would risk an improvident or ill-advised opinion on the legal issues raised." *Hunt*, 57 F.3d at 1338.

controlled by a containment dike and an on-site pond--water from the former is pumped into the latter--and the pond's contents are treated and released into local creeks.

On September 14, 1990, Fairfax residents noticed an oil "sheen" on the surface of Crook Branch Creek. Star soon acknowledged that a large amount of aviation fuel, diesel fuel, and gasoline had leaked into the soil and groundwater. Investigation by the Virginia State Water Control Board revealed an underground "plume" of various fuels. Thereafter, at the Board's request, the Environmental Protection Agency ("EPA") assumed responsibility for the investigation pursuant to the Resource Conservation and Recovery Act ("RCRA") § 7003, 42 U.S.C. § 6973. The EPA and Star negotiated an Administrative Consent Order--subsequently superseded by an Administrative Order--which required Star to implement corrective measures under EPA supervision. In accordance with the Orders, the EPA assumed control of Star's remediation efforts on July 3, 1991.

Another significant spill occurred on December 9, 1991. A valve was left open, allegedly due to the negligence of one of Star's employees or agents, and thirty-four thousand gallons of aviation fuel were released. The spill, contained by the dike, remained on the Tank Farm grounds for two weeks.

On the evening of the 1991 spill, the Cavallos were exposed to fuel vapors in a parking lot about five hundred feet from the Tank Farm. Both noticed an oil-like odor, and Mrs. Cavallo allegedly experienced an immediate irritating reaction. She was treated by several doctors, including Dr. Joseph Bellanti, Director of Allergy-Immunology at Georgetown Medical Center. Dr. Bellanti testified that Mrs. Cavallo suffered from sinusitis, conjunctivitis, and pulmonary dysfunction. His testimony was complemented by that of Dr. David Monroe, a toxicologist, who reported that the exposure

caused Mrs. Cavallo to experience burning eyes, conjunctivitis, sinusitis, and throat irritation. In addition to their exposure on the night of the 1991 spill, the Cavallos claim that since that time they continually have been exposed in their home to vapors from the Tank Farm. Mrs. Cavallo alleges that she continues to suffer physical symptoms caused by her exposure to the vapors, and both Cavallos claim damage to their property.

II

We review *de novo* the district court's summary judgments and 12(b)(6) dismissals. *See, e.g., Schatz v. Rosenberg*, 943 F.2d 485, 489 (4th Cir. 1991) (Rule 12(b)(6) dismissal), *cert. denied sub nom., Schatz v. Weinberg and Green*, 112 S. Ct. 1475 (1992); *Goodman v. RTC*, 7 F.3d 1123, 1126 (4th Cir. 1993) (summary judgment). But the parties disagree on the standard by which we review the district court's decision to exclude expert testimony. The Cavallos argue, quoting the Third Circuit's decision in *In re Paoli R.R. Yard PCB Litigation*, that trial judges should not be given the same deference in their decisions to exclude expert evidence as they are given in their decisions about other types of evidence:

> The decision to exclude expert testimony resulting in a summary judgment is subject to a "hard look" review by the appeals court, i.e., a less deferential review than the traditional abuse of discretion standard in light of "a significant risk that district judges will set the threshold too high and will in fact force appellants to prove their case twice."

Brief of Appellants at 3 (quoting 35 F.3d 717, 733 (3d Cir. 1994)). As the defendants point out, however, this court

recently reached the opposite conclusion. In *Benedi v. McNeil-P.P.C., Inc.*, a Fourth Circuit panel stated that "*Daubert [v. Merrell Dow Pharmaceuticals, Inc.,]* clearly vests the district courts with discretion to determine the admissibility of expert testimony." 66 F.3d 1378, 1384 (4th Cir. 1995) (citing 113 S. Ct. 2786 (1993)). Accordingly, we review the district court's decision only for abuse of discretion.

III

A

The district court dismissed Count III which contained both a personal injury claim by Mrs. Cavallo and a claim for the loss of the use and enjoyment of the Cavallo's real property resulting from exposure to vapors under the federal preemption doctrine. See complaint Para. 79. In addition to defending the court's preemption analysis, Star offers an alternative ground for upholding the district court's dismissal. Under Virginia law, it argues, the Cavallos must show physical impact on their property, and "wafting vapors. . . [are] insufficient as a matter of law." To support its position, Star cites another Fourth Circuit case involving the Tank Farm--*Adams v. Star Enterprise*, 51 F.3d 417, 422-25 (4th Cir. 1995).

The *Adams* plaintiffs, a group of landowners, sued for diminution of their property values and for health risks allegedly caused by their subdivision's proximity to an underground "plume" of petroleum products leaked from the Tank Farm. The landowners did not claim that the plume actually contaminated their soil, nor that they detected vapors from the leak on their property. The harm they alleged consisted of a stigma attached to their subdivision and a "*fear* of being exposed to toxic materials." *Id.* at 422 & n.5. The

court held that the landowners' claims could not proceed, because Virginia law allowed recovery only if "the activity or condition complained of was actually *physically perceptible* from the plaintiff[s'] property." *Id.* at 422-23 (emphasis added).

Star argues that "wafting vapors" are not "physically perceptible" under *Adams*. We disagree. The context for the *Adams* court's focus on physical perception was its discussion of *Foley v. Harris*, in which the Virginia Supreme Court allowed recovery against a defendant whose wrecked cars were visible from the plaintiffs' property. 286 S.E.2d 186, 190-91 (Va. 1982). The *Adams* court distinguished *Foley* because the *Foley* plaintiffs, unlike those in *Adams*, could sense the source of the offense from their own property. *Adams*, 51 F.3d at 422-23. Smell, like sight, certainly constitutes physical perception. And, although the Cavallos do not allege that they smelled the vapors, the physical symptoms Mrs. Cavallo suffered also might suffice. We conclude, based upon *Adams*, that the portion of Count III relating to the loss of use and enjoyment claim may be cognizable under Virginia law and that it was error to dismiss it under Fed. R. Civ. P. 12 (b)(6) upon the alternative ground suggested by Star. Since the damage alleged in *Adams* was based simply upon a fear of future events and these allegations are much more direct, we hold that they are sufficient to sustain the loss of use and enjoyment portion of Count III under Virginia law.

We reach a different result, however, with reference to that portion of Count III asserting a personal injury claim by Mrs. Cavallo. The Virginia Supreme Court stated in *Foley* that"[t]he discomfort and annoyance [complained of] must . . . be significant and of a kind that would be suffered by a normal person in the community." *Foley*, 286 S.E.2d at 190, 191 (emphasis added). Mrs. Cavallo is not such a person; in fact, she alleges specifically that she is"highly susceptible" to

petroleum vapors. Complaint ¶ 50. Hence, the personal injury portion of Count III is not cognizable under Virginia law and was properly dismissed.

B

An agreement between the parties treats all the Cavallos' claims as filed on December 8, 1993. The district court ruled that all counts but Count I are necessarily barred by the interaction of the statutes of limitation and federal preemption, because: (1) the counts involve remediation efforts at the Tank Farm, (2) the statutes of limitation bar all claims based on events occurring before December 8, 1991, and (3) preemption bars all claims based on events occurring after September 1991, when the EPA took control of remediation efforts. Because we affirm on other grounds the district court's dismissal of the physical injury claim in Count III, *supra* part III.A, we limit our preemption analysis to Count II, the portion of Count III containing the loss of use and enjoyment claim, and Count IV only.

This court summarized the law of preemption in *Worm v. American Cyanamid Co.*:

> The principles of preemption resolve conflicts between federal and state law on the authority of Article VI of the Constitution, which provides:
>
> > This Constitution, and the Laws of the United States which shall be made in Pursuance thereof . . .shall be the supreme Law of the Land; and the Judges in every State shall be bound thereby, any Thing in the Constitution

> or Laws of any State to the Contrary notwithstanding.

U.S. Const. Art. VI, § 2. From this Supremacy Clause flows the well-established principle that federal legislation, if enacted pursuant to the Congress' constitutionally delegated authority, can nullify conflicting state or local actions. *See, e.g., Gibbons v. Ogden*, 22 U.S. (9 Wheat.) 1, 210-11, 6 L.Ed. 23 (1824).

Preemption may occur on two bases, the first of which turns on discovering the intent of Congress. Congress may expressly provide that federal law supplants state authority in a particular field or its intent to do so may be inferred from its regulating so pervasively in the field as not to leave sufficient vacancy within which any state can act. *See, e.g., Rice v. Santa Fe Elevator Corp.*, 331 U.S. 218, 230, 67 S.Ct. 1146, 1152, 91 L.Ed. 1447 (1947). But even absent an express or implied congressional intent to preempt state authority in a field, state law is nevertheless preempted by operation of law to the extent that it actually conflicts with federal law. *See Wisconsin Public Intervenor v. Mortier*, ___ U.S. ___, 111 S.Ct. 2476, 2482, 115 L.Ed.2d 532 (1991); *Pacific Gas & Elec. Co. v. State Energy Resources Conserv. & Dev. Comm'n*, 461 U.S. 190, 204, 103 S.Ct. 1713, 1722, 75 L.Ed.2d 752 (1983).

. . . When we address the question of whether state law actually conflicts with federal law, we resolve the more specific inquiries of whether

> "it is impossible to comply with both state and federal law" or "whether the state law stands as an obstacle to the accomplishment of the full purposes and objectives" of federal law. *See Silkwood v. Kerr-McGee Corp.*, 464 U.S. 238, 248, 104 S.Ct. 615, 621, 78 L.Ed.2d 443 (1984).
>
> With these principles stated, we proceed to an examination of [the statute in question], first to determine if Congress intended by its enactment to supplant state authority in the field, and if not, whether state tort and warranty law conflicts with the federal regulatory scheme.

970 F.2d 1301, 1304-05 (4th Cir. 1992).

Two years after *Worm*, in *Feikema v. Texaco, Inc.*, 16 F.3d 1408 (4th Cir. 1994), this court addressed whether state-court relief would conflict with an EPA Consent Order. The *Feikema* plaintiffs sought damages and an injunction requiring

> excavation, treatment and replacement of contaminated soil to a specified depth and over a specified area; . . . "enhanced ground water extraction and bio-remediation to reduce the off-site contamination"; and . . . construction of a "free phase hydrocarbon trench removal system across the water table."

Id. at 1416. Because the EPA Order in *Feikema* focused on a particular incident, and thus was not intended to supplant state authority in the entire field, the court applied only the second, actual-conflict prong of the *Worm* inquiry:

> [W]hen the EPA, acting within valid statutory authority of the RCRA and not arbitrarily, enters into a consent order, that order will also preempt conflicting state regulation, including a federal court order based on state common law. . . .
>
> . . . [T]he test for determining whether state law conflicts with federal law is whether "it is impossible to comply with both state and federal law" or whether "the state law stands as an obstacle to the accomplishment of the full purposes and objectives" of federal law.

Feikema, 16 F.3d at 1416 (quoting *Worm* , 970 F.2d at 1305) (emphasis added) (other citations omitted). Noting that the Consent Order "addresse[d] the same site and conditions covered by the homeowners' suit," the *Feikema* court determined that an injunction would conflict with the EPA's activities and thus was preempted. *Id.*

Regarding the damages claims, the *Feikema* court expressed greater reluctance to preempt state law. It quoted the Supreme Court's opinion in *Nader v. Allegheny Airlines, Inc.*:

> A common-law right, even absent a saving clause, is not to be abrogated "unless it be found that the preexisting right is so repugnant to the statute that the survival of such right would in effect deprive the subsequent statute of its efficacy; in other words, render its provisions nugatory."

426 U.S. 290, 298 (1976) (quoting *Texas & Pacific R. Co. v. Abilene Cotton Oil Co.*, 204 U.S. 426, 437 (1907)), *quoted in*

Feikema, 16 F.3d at 1413. Moreover, the *Feikema* court found indications in RCRA's legislative history that some state causes of action should be permitted: "[W]hile Congress intended for the EPA to have broad authority to act in an imminent hazard situation, it also intended such action to complement other efforts and remedies." *Feikema*, 16 F.3d at 1415 (citing *Report of the Committee on Environment and Public Works*, S. Rep. No. 98-284, 98th Cong., 1st Sess. 56 (1983)). Because the Consent Order did not provide for damages payments to homeowners, the court found, awarding damages to the plaintiffs would not conflict with the Consent Order. Consequently, it allowed the damages claims to proceed. *Id.* at 1417-18.

Judge Murnaghan wrote separately in *Feikema* to emphasize that the court was not applying a different standard to damages than to equitable relief. *Id.* at 1418 (Murnaghan, J., concurring). He stressed that, whatever the relief sought, a "claim is preempted *only* to the extent that it may actually conflict with the EPA's Consent Order and *only* while that Order remains in effect." *Id.* (Murnaghan, J., concurring). In *Feikema*, he wrote, preemption applied to the injunction claim but not the damages claims because, on the particular facts of the case, an injunction would conflict with the Consent Order but a damages award would not. *Id.* (Murnaghan, J., concurring).

The EPA Orders in this case, like those in *Feikema*, do not contemplate compensation for damages to private parties. Thus the Cavallos contend that the damages they seek, like the award sought in *Feikema*, would not conflict with the EPA Orders. The district court disagreed with the Cavallos, relying on Judge Murnaghan's concurrence, and held that the Orders preempted any damages claims based on remediation efforts within the scope of the Orders:

> [D]amages claims are preempted insofar as they arise from remediation efforts under the scope of the EPA Orders. The damages sought here distinguish the case from those damages which were allowed in *Feikema*. Damage liability for activities in conformity with the EPA Orders *conflicts* with the federal interest as effectively as an injunction.

Memorandum Opinion and Order at 5, *in* Joint Appendix at 197 (citing 16 F.3d 1408, 1418 (4th Cir. 1994) (Murnaghan, J., concurring)).

The district court used the correct "conflict" test, and we agree that Star cannot be held liable "for activities *in conformity with* the EPA Orders." But that does not end the inquiry, as the district court appears to have assumed. Although all of Star's allegedly tortious acts occurred after the EPA took control of remediation, the EPA Orders encompassed only remediation efforts, and all of Star's activities at the Tank Farm did not involve remediation. Moreover, even EPA-directed remediation efforts might be actionable if improperly performed. To determine whether damages would conflict with the EPA Orders, then, we must look beyond the temporal scope of the Orders and the scope of the activities they encompassed. Damages claims conflict with EPA Orders only if the allegedly tortious activities (1) were required, directed, or supervised by the EPA, and (2) were performed properly.

In Count II, the Cavallos allege "negligence, carelessness and recklessness" by Star in:

> a. Improperly operating, supervising, and/or managing the [Tank Farm] Facility;

b. Improperly designing, installing and repairing and updating of the Facility;

c. Failure to properly test and inspect Facility equipment;

d. Failure to properly and promptly notify Plaintiff and Mantua residents of the Petroleum releases at the Facility[;]

e. Failure to properly and promptly remediate[sic] and recover/remove the Petroleum Releases[;] and

f. Failure to properly mitigate venting of storage tanks.

Complaint ¶ 72, *in* Joint Appendix at 38. Count IV is based in part on the December 1991 spill, and in part on Star's regular venting of its tanks. Complaint ¶¶ 86-87, *in* Joint Appendix at 21.

To the extent they occurred after December 8, 1991,[3] incidents of improper operation, supervision, management, design, installation, repair, and updating of the Tank Farm or its equipment may be actionable if not compelled by the EPA Orders. Likewise, failure by Star to notify the Cavallos of petroleum releases may support their claims if the releases or failures to notify were not authorized or approved by the EPA. For example, the Complaint indicates that the December 10, 1991, AVJet spill was a mistake--not contemplated by EPA Orders or officials--and alleges that Star waited eight days

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[3] The district court held that claims based on events before December 8, 1991, are barred by the statute of limitations, *see supra* part III.B, and the Cavallos do not appeal that ruling, *see supra* n.2.

before notifying the EPA. Complaint ¶¶ 26-43, *in* Joint Appendix at 28-31. Damages caused by that spill, or by Star's failure to notify the Cavallos during the period before it notified the EPA, thus are not preempted by the EPA Orders.

The EPA Orders did encompass all of Star's remediation efforts, so failures "to properly and promptly remediate and recover/remove the Petroleum Releases" are likely to be preempted. Similarly, the Cavallos allege that venting was "regularly performed," apparently under EPA supervision, so claims of improper venting probably are preempted. Even remediation and venting, however, are actionable if Star tortiously failed to notify the EPA of the releases--a jury might find, for instance, that the delay after the December 1991 spill was negligent--or if Star improperly implemented EPA instructions.

In sum, the fact that allegedly tortious conduct occurred within the temporal and subject-matter scope of an EPA Order does not necessarily compel preemption of a damages claim based on that conduct. We cannot conclusively determine, from the face of the Complaint and the text of the EPA Orders, that the Orders or EPA instructions pursuant to the Orders compelled all of Star's allegedly improper activities and its manner of performing them. Thus we cannot determine whether damages based on those activities would conflict with EPA authority, or, in turn, whether the preemption doctrine applies.

C

The Cavallos assert that, because their claims are grounded in Virginia state law and originally were filed in Virginia state court, the admissibility of expert testimony should be governed by Virginia law. As Star points out, however, this court held expressly in *Scott v. Sears, Roebuck*

& Co. that federal rules apply to the admission of expert testimony in diversity cases:

> Unlike evidentiary rules concerning burdens of proof or presumptions, the admissibility of expert testimony in federal court sitting in the diversity jurisdiction is controlled by federal law. State law, whatever it may be, is irrelevant.

789 F.2d 1052, 1054 (4th Cir. 1986). But the Cavallos respond that *Daubert*, which was decided seven years after *Scott*, implemented a heightened burden of proof--"established toxicological methodology" instead of "greater weight of all the evidence." Because *Scott* specifically excepted burdens of proof, they contend, the rule it established is invalid after *Daubert* and Virginia law should apply. Their argument is meritless. A standard for admission of testimony, however stringent, is not a burden of proof. *Daubert* governs whether evidence is admitted, not how persuasive it must be to the factfinder. Consequently, *Scott* remains good law even after *Daubert*, and the district court correctly applied federal law in determining whether to admit the experts' testimony.

On the merits of the expert-testimony question, the Cavallos' brief succinctly stated the essence of their position:

> The trial court concluded that neither Dr. Bellanti nor Dr. Monroe strictly adhered to the established toxicological methodology in forming their conclusions that Ms. Cavallo's exposure to AVJet vapors from the December 1991 spill caused her various chronic illness[es], and that their testimony, therefore[,] is not supported by appropriate validation as

> required by *Daubert v. Merrell Dow*. 113 S.Ct. at 2795.

Cavallos' Brief at 17 (citation to Joint Appendix omitted).

The parties agree that *Daubert* is the leading case on this issue. But neither party emphasizes that the Supreme Court itself viewed *Daubert* as a liberalization, not a tightening, of the rules controlling admission of expert testimony. The Court recognized that the question had been governed for seventy years by the standard first set out by the D.C. Circuit in *Frye v. United States*--that scientific expert testimony must be based on principles that are "sufficiently established to have gained *general acceptance* in the particular field in which [they] belong[ ]." 293 F. 1013, 1014 (D.C. Cir. 1923) (emphasis added). It held, however, that the *Frye* test had been superseded by Fed. R. Evid. 702.

Rule 702 provides:

> If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training or education, may testify thereto in the form of an opinion or otherwise.

The *Daubert* Court noted that Rule 702 does not mention *Frye*'s "general acceptance" test. Moreover, it stated:

> A rigid "general acceptance" requirement would be at odds with the "liberal thrust" of the Federal Rules and their "general approach of *relaxing* the traditional barriers to 'opinion' testimony." *Beech Aircraft Corp. v. Rainey*,

> 488 U.S. [153,] 169 (1988). . . . That austere standard, absent from and incompatible with the Federal Rules of Evidence, should not be applied in federal trials.

113 S. Ct. at 2794 (emphasis added) (citations to nonquoted sources omitted).

The *Daubert* Court held that two questions control admission of scientific expert testimony: "whether the reasoning or methodology underlying the testimony is scientifically valid and. . . whether that reasoning or methodology properly can be applied to the facts in issue." *Id.* at 2796. In lieu of the *Frye* test, it decided, the validity of the methodology or reasoning is determined using a flexible inquiry based on five factors: (1) whether the testimony has been tested, (2) whether it has been published or exposed to peer review, (3) its rate of error, (4) whether there are standards and controls over its implementation, and (5) whether it is generally accepted. *Id.* at 2796-97. If valid, the Court wrote, whether the testimony can "properly be applied to the facts in issue" is determined by reference to other rules of evidence, *id.* at 2797, such as the relevance and prejudice provisions of Rule 401, *id.* at 2794, and Rule 403, *id.* at 2798.

The *Daubert* Court concluded by reemphasizing that scientific evidence is to be admitted more liberally under Rule 702 than it was under *Frye*, and that exclusion is the least favored means of rendering questionable scientific evidence ineffective:

> Vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence. Additionally, in the event

> the trial court concludes that the scintilla of evidence presented supporting a position is insufficient to allow a reasonable juror to conclude that the position more likely than not is true, the court remains free to direct a judgment, and likewise to grant summary judgment. These conventional devices, rather than wholesale exclusion under an uncompromising "general acceptance" test, are the appropriate safeguards where the basis of scientific testimony meets the standards of Rule 702.

Id. at 2798 (citations omitted).

In the instant case, the district court concluded that the bases of the doctors' opinions were not sufficiently established to warrant their admission into evidence:

> In sum, neither Dr. Monroe nor Dr. Bellanti sufficiently adhered to the established toxicology methodology in forming [his] conclusions that Ms. Cavallo's exposure to AVJet vapors from the December 1991 spill caused her various chronic illnesses. Their testimony, therefore[,] is not "supported by appropriate validation" as required by *Daubert*, and is ultimately unreliable. In the final analysis, the opinions of Drs. Monroe and Bellanti are based largely on hypothesis and speculation. This is not to say that the doctors are insincere in their opinions, or that their opinions may not some day be validated through scientific research and experiment. It may well be that the AVJet spill forever "sensitized" Ms. Cavallo to petroleum vapors

> and various other household chemicals. But the published scientific literature and test results simply do not support that conclusion at this time. And the price paid for this seemingly stringent standard of reliability is that, unavoidably, some legitimate injuries will be left unredressed.

Memorandum Opinion at 39-40, *in* Joint Appendix at 1799-[1]800 (footnotes omitted).

The district court's interpretation is restrictive in this case, but it is not inconsistent with *Daubert*. Although *Daubert* eliminated the requirement of general acceptance, the five factors it established still require that the methodology and reasoning used by a witness have a significant place in the discourse of experts in the field. The district court determined that the testimony of Dr. Bellanti and Dr. Monroe did not have such a place. By making that determination, the court properly exercised its discretion. The Cavallos have shown that the question of admission is close, but we defer to the court's decision to exclude the evidence and affirm its summary judgment on Count I.

IV

The face of the Complaint and the text of the EPA Orders are insufficient to determine whether EPA involvement preempts Count II, the loss and use and enjoyment claim of Count III, and Count IV. Whatever the preemption doctrine's effect, however, the personal injury claim of Count III does not state a claim under Virginia law. Moreover, the district court acted within its discretion by excluding testimony by the Cavallos' experts. Accordingly, we affirm the district court's summary judgment on Count I and its dismissal of the personal injury claim of Count III, but we reverse its dismissal

of Count II, the loss of use and enjoyment claim of Count III, and Count IV and remand them for further proceedings.

AFFIRMED IN PART AND REVERSED AND REMANDED IN PART

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
Alexandria Division

ARDITH CAVALLO,
Plaintiff,

v.

STAR ENTERPRISE, *et, al.*
Defendants.

Civil Action No. 94-1499-A

Entered: June 21, 1995

ORDER

Plaintiff Ardith Cavallo brought suit against Defendants for injuries she allegedly sustained as a result of her exposure to aviation fuel vapors following a spill at a petroleum distribution terminal owned and operated by Defendant Star Enterprise. She claims that a result of her exposure to these vapors, she has developed chronic respiratory problems, including sinusitis and conjunctivitis, as well as increased sensitivity to irritant compounds. In a motion in limine, Defendants moved to exclude the proffered testimony of Drs. Monroe and Bellanti on the ground that their opinions did not meet the requirements for expert testimony set forth in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 113 S. Ct. 2786 (1993). In addition, Defendants moved for summary judgment on the basis the Plaintiff had not come forward with sufficient evidence of causation to create a triable issue of fact for the jury. Plaintiff opposed these motions.

The parties submitted numerous legal memoranda, accompanied by voluminous documentary exhibits, in support of their respective positions, and the Court heard

extensive oral argument on the matter at a hearing held June 16, 1995. Following oral argument, the Court took the motions under advisement. Having further reviewed and considered the parties' memoranda and the record evidence, the Court **ORDERS** as follows:

1. For reasons to be more fully articulated in a forthcoming Memorandum Opinion, the Court concludes that the proffered opinions of Drs. Monroe and Bellanti with respect to the cause of Plaintiff's alleged injuries are not sufficiently "ground(ed) in the methods and procedures of science" or "scientific(ally) valid" to permit admission under the requirements of Rule 702. *Daubert*, 113 S. Ct. at 2795 & n.9. Therefore, the motion in limine is **GRANTED**.

2. It appears to the Court that it follows from the granting of the motion in limine that the motion for summary judgment should also be granted. However, the Court is still reviewing the matter and will issue a further order or a final order once it has completed its review.

3. The Court **ORDERS** that the trial, currently scheduled to commence June 26, 1995, be, and hereby is, canceled and taken off the docket. Should the Court conclude that summary judgment is warranted, a final order will be entered. Should the Court conclude otherwise, the Court will reschedule the trial.

The Clerk is directed to send copies of this Order to all counsel of record.

/s/ T. S. Ellis, III
T. S. Ellis, III
United States District Judge

Alexandria, Virginia
June 21, 1995

UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA,
ALEXANDRIA DIVISION

ARDITH CAVALLO,
Plaintiff,

v.

STAR ENTERPRISE, et al.,
Defendants.

Civil Action No. 94-1499-A

July 10, 1995, Decided
July 10, 1995, ENTERED

COUNSEL: For PLAINTIFF: Mark C. Hayes, Law Offices of Mark C. Hayes, P.C., Alexandria, Virginia, Donnell R. Fullerton, Donnell R. Fullerton, P.C., Fairfax, Virginia, John E. Drury, Law Offices of John Drury, Washington, D.C.

For DEFENDANT: John A. C. Keith, Blankingship & Keith, Fairfax, Virginia, Richard E. Wallace, Jr., Howrey & Simon, Washington, D.C.

JUDGES: T. S. Ellis, III, United States District Judge

OPINION BY: T. S. Ellis, III

OPINION: MEMORANDUM OPINION

In this toxic tort case, the Court must exercise its "gatekeeping responsibility" to assess whether Plaintiff's proffered expert opinions on causation are admissible under *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, _ U.S. _, 113

S. Ct. 2786 (1993). Plaintiff here allege schronic injury from exposure to aviation jet fuel ("AvJet") vapors, and like many toxic tort cases, the central dispute is causation. Specifically, the question presented is whether the opinions of two experts that Plaintiff's exposure to AvJet caused her various chronic respiratory illnesses are admissible where no study or published literature links AvJet vapors to Plaintiff's claimed illnesses and where the experts fail to establish why studies showing a correlation between exposure to other chemicals and much less significant illnesses support their proffered conclusions in this case.

I. Statement of Facts[1]

Plaintiff Ardith Cavallo is a resident of Fairfax, Virginia. Late in the evening of December 9, 1991, Ms. Cavallo and her husband, Lawrence Cavallo, dined at a Chinese restaurant. The couple enjoyed a leisurely dinner and some late-night conversation with the proprietors. Then, shortly after midnight, the Cavallos left the restaurant and proceeded across the parking lot to their car. On the way to the car, the Cavallos noticed an odor in the air, which Mr. Cavallo identified as an oil smell. By the time the couple reached the car, a process which consumed approximately five minutes, Ms. Cavallo had begun to experience severe burning in her eyes, a sensation of fullness in her left ear, and irritation in her throat. Mr. Cavallo apparently did not experience these effects.

The restaurant, it appears, is located in a shopping mall just 500 feet from a petroleum distribution, mixing and transfer terminal ("the Star facility") owned and operated by

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[1] For purposes of disposing of the motions at bar, the facts in this case, many of which are hotly disputed, are presented here in the light most favorable to Plaintiff. *See Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 587, 89 L. Ed. 2d 538, 106 S. Ct. 1348 (1986).

Defendant Star Enterprise ("Star").[2] Beginning either late in the evening of December 9, 1991 or very early the following morning, approximately 34,000 gallons of AvJet accidentally overflowed from a storage tank located at the Star facility. While the parties dispute the exact timing of the spill, they agree for purposes of these proceedings that the spill was either ongoing or had already concluded at the time the Cavallos crossed the restaurant parking lot. According to Ms. Cavallo's air modeling expert, Dr. Robert Haberlein, the spill resulted in airborne emissions of hydrocarbon vapors in the restaurant parking lot, at a maximum, "worst-case" concentration of 61 milligrams per cubic meter ("61 mg/m^3") (Haberlein Rpt., at V-1). Although Star's air modeling expert opines that this figure is seriously flawed and overstates the possible concentration of AvJet vapors in that area by a factor of 1000, Star concedes the 61 mg/m^3 level of exposure for purposes of the motions at bar.

On reaching her home, which is located approximately one half mile from the Star facility, Ms. Cavallo applied boric acid to her eyes in an effort to soothe them. Although she continued to suffer pain and discomfort, Ms. Cavallo did not seek emergency medical treatment. Rather, she waited nine days before seeking medical attention for her ailments. On December 19, 1991, she consulted Dr. Joseph Sabri, an otolaryngologist.[3] According to Dr. Sabri, Ms. Cavallo complained of mild congestion, tinnitus,[4] dizziness and

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[2] Star is a joint venture partnership. The joint venture partners, also defendants in this case, are Texaco Refining and Marketing (East), Inc. and Saudi Refining, Inc. For convenience, all three defendants are referred to collectively as "Star".

[3] An otolaryngologist is an ear, nose, and throat specialist

[4] Tinnitus is defined as "[a] sound in the ears, as buzzing, ringing, or whistling, caused by a defect in the auditory nerve." *Webster's II New Riverside University Dictionary* 1212 (1984).

headaches, all of which she believed were related to the AvJet spill. After examining Ms. Cavallo and finding no physical symptoms, Dr. Sabri diagnosed her with vasomotor rhinitis, which he explained was a "stuffy nose or a cold." (Sabri Tr., at 16-17). He then prescribed Advil and warm showers. Ms. Cavallo followed the advice for several months, but grew frustrated when her symptoms persisted and consulted another physician, Dr. Richard Rosenthal, on May 4, 1992. According to Dr. Rosenthal, who specializes in immunology and allergies, Ms. Cavallo described her symptoms at that time as dizziness, eye irritation, a stuffy nose, and postnasal drip. Following his physical examination, Dr. Rosenthal diagnosed Ms. Cavallo with conjunctivitis, or eye redness, but detected no pulmonary problems or sinusitis.

Ms. Cavallo's symptoms continued, and on June 30, 1993, she consulted another otolaryngologist, Dr. Neeraj Gupta. Although Dr. Gupta's physical examination of Ms. Cavallo revealed no significant pathology in her upper respiratory system, a CAT scan performed on July 1, 1993 disclosed what Dr. Gupta termed "acute possible chronic sphenoid sinusitis," which he considered to be "close to a medical emergency." (Gupta Tr., at 21-22). To treat the sphenoid sinusitis, Dr. Gupta prescribed antibiotics and nasal spray. The treatment apparently worked, as a second CAT scan performed three months later revealed that Ms. Cavallo's "sinusitis had resolved or almost completely resolved," (Gupta Tr., at 26), thereby rendering further antibiotic treatment unnecessary. Dr. Gupta also performed another physical exam, the results of which were normal. Nonetheless, Ms. Cavallo continued to complain of "nonspecific" symptoms, such as nasal congestion, postnasal drip, eye irritation, facial pain, headaches, and fullness of the ears. (Gupta Tr., at 27). Then, as now, these symptoms tended to abate when she left the vicinity of the Star facility, but renewed upon her return.

Finally, on July 5, 1994, Ms. Cavallo consulted yet another physician, Dr. Joseph Bellanti, an immunologist who

is her current treating physician and whom she has retained to testify as an expert in this case. Following a physical examination, Dr. Bellanti determined that Ms. Cavallo suffered from postnasal drip, a swollen eye, frontal pain, conjunctivitis, a stuffy nose, acute sinusitis, and bronchitis. In his written report, Dr. Bellanti concludes that Ms. Cavallo has developed chronic sphenoid sinusitis and pulmonary dysfunction, illnesses he believes were directly caused by Ms. Cavallo's exposure to petroleum vapors from the AvJet spill in December 1991. Furthermore, Dr. Bellanti concludes that her exposure to AvJet vapors on the night of the spill has "sensitized" her to various volatile organic compounds, including petroleum vapors, as well as certain household chemicals found in products such as Windex and aftershave lotion. Dr. David Monroe, a toxicologist retained by Ms. Cavallo as another expert in this action, agrees that her conjunctivitis and sinusitis were caused by the Avjet spill and also concludes that she has developed an increased sensitivity to various chemical irritants as a result of the spill.[5] It is these two opinions that are the focus of the pending motions.

The Cavallos brought this suit against Star on November 14, 1994, alleging injuries under four separate counts. Three of the counts, Counts Two through Four, have already been dismissed in a prior proceeding before Judge Bryan.[6] Only Count One remains. In this count, Ms. Cavallo

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5 Unlike Dr. Bellanti, however, Dr. Monroe has no opinion regarding whether Ms. cavallo's alleged chronic pulmonary disease resulted from the AvJet spill.

6 The tortious conduct alleged in those three counts involved the continued release of petroleum hydrocarbon vapors from the Star facility during and after Star's clean-up efforts, efforts which the Cavallos alleged to be inadequate and harmful. specifically, Count Two presented a claim for "Negligent Petroleum Release and Negligent Abatement and Remediation of the Petroleum Release"; Count Three sought damages for "Common Law Trespass"; and Count Four claimed "Liability under the State Water Control Law." By order dated January 20, 1995, Judge Bryan

claims that Star was negligent in permitting the December 1991 AvJet spill, and that her chronic illnesses are a direct result of her exposure to vapors from that spill. She seeks damages for personal injury (including chronic conjunctivitis, sinusitis, pulmonary disease, and increased sensitization to petroleum hydrocarbons),[7] impairment of earning capacity, lost business profits, medical expenses, pain and suffering, as well as punitive damages.

Star now brings two motions. The first is a motion in limine to exclude the expert testimony of Drs. Bellanti and Monroe on the causation issue. Relying on the principles outlined in *Daubert* and its progeny, Star argues that neither expert grounds his conclusion of causation on scientific tests or literature linking the chemicals to which Ms. Cavallo was allegedly exposed, and at the levels and duration of purported exposure, to the injuries she claims to have sustained. Indeed, Star claims, their opinions run counter to all available published studies on the effects of AvJet or kerosene at the alleged level of exposure. As such, Star contends, their opinions are not founded on a scientifically valid methodology and are impermissibly speculative. In response, Ms. Cavallo points out that in forming their conclusions of causation, both experts relied on published studies involving the effects of other volatile organic compounds. To look beyond this basic adherence to form and inquire whether their reasoning is valid,

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dismissed Counts Two through Four on the ground that damages stemming from fuel discharges that were in compliance with orders of the Environmental Protection Agency ("EPA"), such as those discharges occurring during Star's remediation efforts, are barred by the doctrine of preemption. Because Mr. Cavallo was only named as a plaintiff in Counts Three and Four, he is no longer a party to this action.

[7] From a review of the complaint and her subsequent pleadings, it is apparent that Ms. cavallo seeks damages for her chronic, ongoing illnesses and not for her initial pain and discomfort immediately following her exposure to the vapors from the spilled fuel.

Ms. Cavallo argues, is to usurp the role of the jury and exceed the proper bounds of judicial gatekeeping under *Daubert*. Star's second motion is a motion for summary judgment, and it appears to rely chiefly on the motion in limine. Thus, Star contends that if the motion in limine is granted, there would be insufficient evidence of causation to permit a jury to find in favor of Ms. Cavallo.

Oral argument on the motions was heard on June 16, 1995, following which the matters were taken under advisement. The Court thereafter reviewed the record, the parties' arguments, and the relevant case law, and on June 21, 1995, issued an Order granting the motion in limine for reasons to be set forth in a subsequent memorandum opinion. The motion for summary judgment remained under advisement, and is now ripe for disposition, as well. This Memorandum Opinion sets forth the reasons for granting the motion in limine and the summary judgment motion.

II. Motion in Limine

The admissibility of expert testimony is expressly governed by Rule 702 of the Federal Rules of Evidence, [8] which provides:

> If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact

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[8] As the Supreme Court made clear in *Daubert*, __U.S. __ at __, 113 S. Ct. at 2792-94, Rule 702 displaces the former *Frye* standard regarding expert testimony, a standard which focused exclusively upon whether the proffered expert opinion had gained "general acceptance" in the relevant scientific community. *Frye v. United States*, 293 F. 1013, 1014 (D.C. Cir. 1923). Although "general acceptance" remains a relevant factor under Rule 702 in determining the admissibility of scientific expert testimony, it is but one of many relevant factors. *Daubert*, __ U.S. __ at __, 113 S. Ct. at 2797.

> in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise.

In discussing the requirements of Rule 702, the Supreme Court has emphasized that federal judges maintain a "gatekeeping responsibility" to ensure that admitted scientific testimony is both relevant and reliable. *Daubert*, __U.S. __ at __, 113 S. Ct. 2786 at 2795 & n.7. Because expert witnesses, unlike ordinary witnesses, may offer opinions that are not based on first hand knowledge or observation, Rule 702 sensibly imposes threshold standards for admitting such testimony. Thus, underlying the Rules' allowance of expert testimony is the fundamental "assumption that an expert's opinion will have a reliable basis in the knowledge and experience of his discipline." *Id.*, __ U.S. __ at __, 113 S.Ct. at 2796. Given this, and given the unique potential of expert evidence to "be both powerful and quite misleading," *id.*, __ U.S. __ at __, 113S. Ct. at 2798 (citation omitted), the reliability and relevance of expert testimony are preliminary matters for the courts' determination. *Id.*, __U.S. __ at __, 113 S. Ct. at 2794-98.

In performing this "gatekeeping" task, district judges are instructed to engage in a two-part analysis. *United States v. Dorsey*, 45 F.3d 809, 813 (4th Cir.), *cert. denied*, __ U.S. __, 132 L. Ed. 2d 871, 115 S. Ct. 2631, (1995); *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 43 F.3d 1311, 1315 (9th Cir. 1995) (on remand from *Daubert*, __ U.S. __ at __, 113 S.Ct. at 2786) (hereinafter "*Daubert* Remanded"). First, district courts must determine whether the proffered expert testimony consists of "scientific knowledge", which is essentially a reliability inquiry. *Id.* Second, even if the "scientific knowledge" prong is satisfied, courts must inquire further to ascertain whether the proposed testimony is relevant,

that is, whether it will "assist the trier of fact." *Id.* These two steps are addressed seriatim.

The Supreme Court has interpreted the "scientific knowledge" requirement of Rule 702 as "establish[ing] a standard of evidentiary reliability" or "trustworthiness", *Daubert*, __ U.S. __ at __, 113 S. Ct. at 2795 & n.9, where "evidentiary reliability" means, in effect, "scientific validity". *Id.*, __ U.S. __ at __, 113 S. Ct. at 2795 n.9. And to be scientifically valid, an expert's opinion must be "ground[ed] in the methods and procedures of science," *id.*, and "supported by appropriate validation." *Id.*, *Dorsey*, 45 F.3d at 813. Thus, conjecture, hypothesis, "subjective belief, or unsupported speculation" are impermissible base for expert opinion and must be discarded. *Daubert*, __ U.S. __ at __, 113 S. Ct. at 2795; *Anderson v. National R.R. Passenger Corp.*, 866 F. Supp. 937, 943 (E.D. Va. 1994). In short, *Daubert* commands that in court, science must do the speaking, not merely the scientist.[9] *See Daubert* Remanded, 43 F.3d at 1311.

A variety of factors may affect the validity, or reliability, of a particular scientific expert opinion, but the *Daubert* Court noted four in particular. They are:

> (1) whether the theory or technique used by the expert can be, and has been, tested; (2) whether the theory or technique has been subjected to peer review and publication; (3) the known or potential rate of error of the method used; and (4) the degree of the

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[9] Of course, scientists, like all human beings, hold certain opinions based on no more than intuition or belief. Because such opinions are not subject to rigorous scientific validation (through testing, peer review, and the like), they are mere hypotheses that fall short of the evidentiary requirements of Rule 702. Were such untested opinions and beliefs admissible, then, contrary to *Daubert*, scientists would be speaking in court without the benefit of science.

> method's or conclusion's acceptance within the relevant scientific community.

Dorsey, 45 F.3d at 813 (citing *Daubert*, __U.S. __ at __, 113 S. Ct. at 2796-97). Testing is an important factor because it is at the heart of scientific methodology; if a particular theory or technique cannot be tested in an attempt to prove its truth or falsity, it bears less resemblance to science than to general philosophy. *Daubert*, __ U.S. __ at __, 113 S. Ct. at 2796-97. Testability central to the scientific method. Similarly, while not dispositive, the peer review and publication inquiries are important for the simple reason that a theory or technique that has withstood the critical review of fellow scientists is apt to be more reliable than one that has remained sheltered from professional scrutiny. *Daubert*, __ U.S. __ at __, 113 S. Ct. at 2797 (stating that "submission to the scrutiny of the scientific community is a component of 'good science,' in part because it increases the likelihood that substantive flaws in methodology will be detected"). The rate of error of a particular method is relevant, of course, to its reliability, as is the degree to which a method or theory has been embraced by the scientific community. It bears emphasizing that no one factor controls, and the circumstances of each particular case must be carefully considered.

The second part of the admissibility analysis gives the courts a more familiar role to play. Described by the Supreme Court as "fit", this second prong focuses on the relevance of the proffered opinion to an issue in the case. *Daubert*, __ U.S. __ at __, 113 S. Ct. at 2795-96. As the *Daubert* Court aptly noted, "fit" is required because "scientific validity for one purpose is not necessarily scientific validity for other, unrelated purposes." __ U.S. __ at __,113 S. Ct. at 2796. Accordingly, not only must the opinion be scientifically valid, or reliable, but it must also advance the trier of fact's understanding of a material issue in the case.

The distinction between "scientific validity" and "fit" is not always clear, and the two inquiries may overlap in a particular case. For instance, there may be times where an expert relies on published literature and widely accepted, tested theories in forming her opinion, and her ultimate conclusion is clearly relevant to an issue in the case. Yet, if those published theories and studies purport to prove XYZ, and from them, the expert concludes ABC, it may be that the expert's reasoning process itself is not scientifically valid. Put another way, there may be a lack of "fit" between the tested theories relied upon and the ultimate conclusion reached. An extreme example illustrates this point. A study regarding the mating habits of gypsy moths may be scientifically valid for certain purposes, and an expert's conclusion that a particular chemical caused a certain illness may be relevant in a given case. But if the expert purports to base her causation conclusion on the gypsy moth study, then the opinion can hardly be said to have met the requirements of Rule 702. Although courts must not exclude expert testimony based on a valid methodology simply because they disagree with the ultimate conclusion reached, they have an obligation to ensure that the conclusion is reliable, that is, that there is a scientifically valid link between the sources or studies consulted and the conclusion reached. *Cf. Porter v. Whitehall Lab., Inc.*, 9 F.3d 607, 614 (7th Cir. 1993) (stating that "[i]f experts cannot tie their assessment of data to known scientific conclusions, based on research or studies, then there is no comparison for the jury to evaluate and the expert's testimony is not helpful to the jury").

The Third Circuit addressed this problem in *In re Paoli R.R. Yard PCB Litigation*, 35 F.3d 717 (3d Cir. 1994), *cert. denied*, __ U.S. __,115 S. Ct. 1253 (1995). There, residents housed near a railcar maintenance facility that had used polychlorinated biphenyls (commonly referred to as PCBs) in its business activities for many years claimed that their continued exposure to the PCBs had caused a variety of

illnesses. In reviewing the *Daubert* principles, the Third Circuit panel noted that the scientific knowledge requirement, which mandates that the expert's conclusions be based on "good grounds", applies to each step of the expert's analysis. *Paoli R.R.*, 35 F.3d at 745. Thus, the panel emphasized that "any step that renders the analysis unreliable under the *Daubert* factors renders the expert's testimony inadmissible. This is true whether the step completely changes a reliable methodology or merely misapplies that methodology." *Id.* (emphasis in original). Similarly, the *Paoli* panel remarked that "the expert's view that a particular conclusion 'fits' a particular case must itself constitute scientific knowledge -- a challenge to 'fit' is very close to a challenge to the expert's ultimate conclusion about the particular case." *Id.* at 746. *Cf. Developments in the Law -- Confronting the New Challenges of Scientific Evidence*, 108 Harv. L. Rev. 1481, 1536 (1995) (stating that where expert relies on studies involving animal exposure to particular chemical to prove similar effect in humans, "[c]ourts must assess the scientific validity of the hypothesis proffered to justify such an extrapolation").

This interrelationship between fit and scientific validity is illustrated by a case involving an alleged correlation between a pregnant woman's use of Retin-A, a Vitamin A derivative acne medication, and her child's birth defects. *Chikovsky v. Ortho Pharmaceutical Corp.*, 832 F. Supp. 341 (S.D. Fla. 1993). Although there were no published studies on the effects of Retin-A on fetal development, the plaintiff's expert in *Chikovsky* concluded that the Retin-A absorbed by the mother had caused the child's birth defects. He based this conclusion on studies showing a correlation between birth defects and high doses of Vitamin A and certain other Vitamin A derivatives. In holding that the expert's opinion was not scientifically valid, the court cited the expert's ignorance of the amounts of Retin-A absorbed by the plaintiff, noted the absence of any established dose-response relationship for Vitamin A and birth defects, and explicitly found that his

"analogies to research concerning Vitamin A and other Vitamin A derivatives is [sic] wanting." *Id.* at 346.

Similarly, in *Schmaltz v. Norfolk & Western Ry. Co.*, 878 F. Supp. 1119 (N.D. Ill. 1995), the plaintiff claimed that his exposure to certain herbicides containing atrazine caused his chronic respiratory disease. Like the situation in *Chikovsky*, the plaintiff's expert could not cite any documented cases where exposure to these chemicals caused the alleged illness. Rather, he relied on studies where high doses of atrazine caused eye irritation in rabbits. In excluding the expert's testimony under *Daubert*, the court observed that the record

> fails to make clear why the incidence of eye irritation in rabbits exposed to high doses of atrazine could reasonably lead a doctor to conclude that an indirect exposure to atrazine could cause pulmonary or respiratory conditions in humans. 'The analytical gap between the evidence presented and the inferences to be drawn on the ultimate issue . . . is too wide' in the present case.

Schmaltz, 878 F. Supp. at 1122 (quoting *Conde v. Velsicol Chem. Corp.*, 24 F.3d 809, 814 (6th Cir. 1994)). Thus, it is apparent that a determination regarding the scientific validity of a particular theory requires not only an examination of the trustworthiness of the tested principles on which the expert opinion rests, but also an analysis of the reliability of an expert's application of the tested principals to the particular set of facts at issue.

These, then, are the principles that describe and control a district court's gatekeeping function, and they are therefore the principles that govern the assessment of the expert opinions at bar.

A. Dr. Monroe

1. The illness

Dr. Monroe is a toxicologist. In his report on Ms. Cavallo, Dr. Monroe concludes that she "is suffering a variety of irritant effects from exposure to petroleum hydrocarbon vapors from the Fairfax Terminal site." (Monroe Rpt. at 5). This conclusion is certainly vague, as it fails to identify the "irritant effects" from which Ms. Cavallo suffers. Nor does it distinguish between harms attributable to the December 1991 AvJet spill and harms caused by vapors released incident to Star's normal operations. These deficiencies are important, for as noted earlier and due to prior rulings in this case, Ms. Cavallo may only recover for specific injuries directly attributable to the AvJet spill. Yet, it is also important to note that this fact does not necessarily preclude recovery for symptoms related to her continued exposure to the petroleum hydrocarbons from the Star facility, provided the spill itself injured her in such a way as to render her more susceptible to such symptoms.

As it happens, however, Dr. Monroe's deposition testimony provides a more detailed description of his opinions in this case. From this testimony, it appears that the "irritant effects" to which Dr. Monroe referred in his written report include chronic burning sensations in the eyes, conjunctivitis, sinusitis, and throat irritation. It is also apparent that Dr. Monroe believes that Ms. Cavallo's exposure to AvJet fumes on the night of the spill has chronically "sensitized" her to petroleum hydrocarbons and various other chemicals. While she could tolerate exposure to low levels of these hydrocarbons before the spill, he opines, her inhalation of heightened concentrations of hydrocarbons on the night of the spill has now rendered her unable to tolerate those same low

levels of daily exposure.[10] Dr. Monroe's opinion is plainly relevant to the issue of causation, and if scientifically valid, would be admissible to show that Ms. Cavallo's exposure to

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[10] Excerpts from Dr. Monroe's deposition testimony are instructive.

> Q: Do you have any opinion as to which of these conditions Mrs. Cavallo suffers from?
>
> A: My opinion is that her condition is the result of the irritant effects of emissions from the Avjet spill. And it is a chronic condition also involving continuing low level exposures to various compounds from that site. Oh, I should also note that she apparently was able to tolerate those low level exposures prior to her exposures at the time of the spill incident, and that is what indicates to me that she became more sensitive at that particular time.

(Monroe Tr., vol I., at 42).

> Q: Which of her symptoms were caused by her subsequent exposure to petroleum hydrocarbons since December of 1991?
>
> A: I believe that the December of 1991 exposure initiated the disease processes in Mrs. Cavallo. I don't believe the subsequent exposures caused these illnesses, though her condition appears to improve and worsen according to ongoing exposures.

(Monroe Tr., vol. II, at 7).

> Q: So there's [sic] really two things that happened to her; she had this [sic] specific irritant effects that were directly caused in December of '91 as well as this increased sensitivity, is that correct?
>
> A: I believe that is what her medical records indicate.

(Monroe Tr., Vol. II, at 36-37).

vapors from the AvJet spill caused her various ongoing illnesses.

2. The methodology

Analysis properly focuses, therefore, on whether Dr. Monroe's opinion in this regard passes the scientific validity test of *Daubert*. And, as *Daubert* makes clear, the proper focus of this inquiry rests upon the validity of his chosen methodology. While Dr. Monroe is not explicit regarding the methodology he followed in this case,[11] Star contends that

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[11] Although Dr. Monroe notes that various factors support his conclusion, he does not set forth what methodology is appropriate or valid for a toxicologist to follow in reaching such a conclusion. As stated in his report, the factors supporting his conclusion are:

> 1) her general good health prior to the exposure.
>
> 2) close proximity in time between her exposure to volatile components of the aviation fuel spill and the initial onset of symptoms.
>
> 3) highly irritant nature of the volatile petrochemicals as indicated by symptomology [sic] of firemen and others at the spill site.
>
> 4) opinions of her treating physicians that the observed symptoms are the probable result of exposure to petroleum hydrocarbons.
>
> 5) worsening of symptoms when the petroleum vapors are present and improvement of symptoms when she is able to spend time away from the area.
>
> 6) consistency of Mrs. Cavallo's symptoms with the known health effects of exposure to volatile organic compounds as detailed in the published medical literature.

(Monroe Rpt. at 6).

there are certain scientific principles and methods upon which a toxicologist must rely in forming an opinion regarding whether exposure to specific chemicals could cause certain maladies in individuals. Specifically, the methodology adopted by Star's toxicology expert, Dr. Joseph Rodricks, and endorsed by the World Health Organization, the National Academy of Sciences, and various agencies of the United States Government, calls for the following "risk assessment":

> [(1)] First, an evaluation is made of the chemicals to which the individual might have been exposed, and of the concentrations of these chemicals in air breathed by the individual. [(2)] The second step involves an evaluation, based on the published scientific literature, of the exposures necessary to produce the adverse effects associated with the chemicals to which individuals may be exposed. [(3)] These two evaluations are then combined in the final step of the risk assessment to provide an estimate of the likelihood that any of the harmful properties of any or all of the chemicals might have been expressed in the exposed individual.

(Rodricks Rpt. at 3). As Dr. Rodricks explains, all chemicals can cause health problems at some level or concentration of exposure, but they vary widely in the types of harm caused and in the levels of exposure required to trigger those harms. In addition, all chemicals have thresholds of exposure that must be exceeded before the harms will occur, and these thresholds may be identified through scientific studies and literature. The task of the toxicologist, therefore, is to identify

a dose-response relationship for a particular chemical (or chemical mixture) and illness and analyze the results to determine whether the duration and concentration of exposure in a given instance could have caused the alleged harms. (Rodricks Rpt. at 2-3).

Significantly, in her memorandum opposing the motion in limine, Ms. Cavallo acknowledges that the methodology described by Dr. Rodricks is the appropriate methodology for a toxicologist. Furthermore, she contends that Dr. Monroe followed that methodology in reaching his conclusion. It is this contention that must now be examined.

With respect to the first step in the analysis, Dr. Monroe concedes that he knows some, but not all, of the specific volatile components of the spilled AvJet fuel, such as naphthalene, xylene, hexane, nomane, decane, undacane, octane, and ethyl benzine. In addition, the parties agree for present purposes that the concentration of exposure was 61 mg/m^3, for a duration of 5-30 minutes.[12]

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[12] Dr. Monroe was not aware of the concentration and duration of exposure in making his initial assessment. It is fairly clear from a review of the record that in many instances, Dr. Monroe did not follow the methodology to form his opinion, but rather formed his opinion and then tried to conform it to the methodology. The following dialogue is illustrative:

> Q: And it's your opinion that [a concentration of 61 mg/m^3] would be sufficient to cause sensitization in Mrs. Cavallo; is that correct?
>
> A: That's correct.
>
> Q: What concentration -- First of all, let me ask you this. What was the duration of the exposure?
>
> A: Well, I'm not sure exactly.
>
> Q: Would that be important to know?

The second step in the methodology requires the toxicologist to consult the published literature to ascertain a dose-response relationship for the particular chemicals at issue. Dr. Monroe agreed in his deposition that "there should be a threshold below which irritant effects do not occur," and he conceded that he did not know the specific threshold for the chemicals to which Ms. Cavallo was exposed. (Monroe Tr., Vol II, at 37). Nonetheless, he stated that the literature and studies he reviewed provided ample support for his conclusion that Ms. Cavallo's one-time exposure to AvJet for a period of 5-30 minutes at a concentration of 61 mg/m^3 caused her chronic conjunctivitis and her heightened chemical sensitivity.[13] With respect to the chronic conjunctivitis, the

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A: I've not found that to be essential for my assessment.

Q: Why is that, sir?

A: Because the available information is sufficient to indicate that the exposure was of sufficient duration to cause an irritant effect on Mrs. Cavallo.

(Monroe Tr., vol. 1, at 50-51).

[13] Notably, Dr. Monroe acknowledged that he could find no literature supporting the proposition that exposure to AvJet at a concentration of 61 mg/m^3 for 5-30 minutes could cause Ms. Cavallo's sinusitis. The following exchange took place during his deposition:

Q: In your opinion can an exposure, one-time exposure to 61 milligrams per cubic meter cause sinusitis?

A: I believe it can cause respiratory irritation. I have not found any citations which support its causing sinusitis.

Q: In your opinion can an exposure at 61 milligrams per cubic meter cause sinusitis?

studies on which Dr. Monroe places primary reliance are the Molhave study,[14] the Koren study,[15] the Bascom case report,[16] and the Porter case report.[17]

In the Molhave study, a group of 62 individuals who were already sensitive to their indoor environments were exposed for less than three hours to a mixture of 22 volatile organic compounds ("VOCs"). The purpose of the study was to examine indoor air quality and what has come to be known as "sick building syndrome," and the individual VOCs used were known to be indoor air pollutants. The study showed that

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> A: I believe that in the case of Mrs. Cavallo that that is correct.
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> Q: I'm not sure I understand your answer, but let me ask the question again. Can an exposure, a one-time exposure to 61 milligrams per cubic meter cause sinusitis?
>
> A: Well, I haven't found sufficient data on which to estimate a threshold for that effect, so I do not know.
>
> Q: So you have no opinion, then, as to whether sinusitis can be caused by an exposure of 61 milligrams per cubic meter, is that correct?
>
> A: That's right.

(Monroe Tr., Vol. II, at 49-50).

[14] Lars Molhave et al., *Human Reactions to Low Concentrations of Volatile Organic Compounds*, 12 Env't Int'l 167 (1986).

[15] Hillel S. Koren et al., *Exposure of Humans to a Volatile Organic Mixtures III: Inflammatory Response*, 47 Archives Envtl. Health 39 (1992).

[16] R. Bascom, *Differential Responsiveness to Irritant Mixtures: Possible Mechanisms*, 641 Ann. N.Y. Acad. Sci. 225 (1992).

[17] Henry O. Porter, *Aviators Intoxicated by Inhalation of JP-5 Fuel Vapors*, 1990 Aviation, Space, & Envtl. Med. 654 (1990).

exposure to this combination of 22 VOCs for 2.75 hours at concentrations of 5 and 25 mg/m^3 caused irritation in the exposed individuals' eyes, nose and throat. None of the exposed individuals suffered lasting effects.

In the Koren study, which again focused on problems associated with indoor air quality, the authors exposed 14 healthy individuals to almost the identical 22 VOCS used in the Molhave study. The study noted increases in nose and throat irritation after exposure to the mixture at a concentration of 25 mg/m^3 for four hours. No lasting effects were observed.

Neither party submitted a copy of the Bascom article, so review here is limited to the synopsis provided by Dr. Monroe in his written report. According to Dr. Monroe, this paper reports a case of severe irritant conjunctivitis from exposure to VOCs emitted from new carpeting that was installed at the patient's place of work. Symptoms resolved during medical leave but recurred when she returned to work, and she eventually had to resign from her job. (Monroe Rpt. at 4). Unlike the Molhave and Koren studies, the Bascom article is an anecdotal case report and does not reflect the results of a pre-designed study in a controlled setting.[18]

Finally, the Porter article, also anecdotal, reports on the physical symptoms of two Navy aviators following an incident where their cockpit accidentally became "overwhelmed" with JP-5 fuel vapors.[19] The aviators had detected fuel vapors

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[18] The findings of anecdotal case reports are generally afforded less weight than the conclusions of designed and controlled studies. *See Casey v. Ohio Medical Prods.*, 877 F. Supp. 1380, 1385 (N.D. Cal. 1995) (stating that "case reports are not reliable scientific evidence of causation, because they simply describe reported phenomena without comparison to the rate at which the phenomena occur in the general population or in a defined control group; do not isolate and exclude potentially alternative causes; and do not investigate or explain the mechanism of causation").

[19] The author explains that "military JP-5 fuel is composed of straight chain hydrocarbons between C10 and C15. It is a high flash-point kerosene-type aviation fuel mixture" with various additives. He also notes

throughout the one-hour flight, but the fumes suddenly became "excessive," and an emergency landing was required. Both pilots experienced burning sensations in their eyes, and one developed a headache and nausea. One pilot recovered completely within 24 hours, and the other had fully recovered and returned to flight duty within four days. The author concluded that exposure to the JP-5 fuel can cause a short-term intoxicating effect in humans.[20]

The scientific basis for Dr. Monroe's reliance on these studies is far from clear. In explaining why he believes the results of the Molhave study are transferrable to the effects of kerosene or AvJet, Dr. Monroe stated at one point in his deposition testimony that it was due to "similarities in the components in the mixture used by Molhave and components in the volatile fractions of kerosene and avjet [sic]." (Monroe Tr., Vol. II, at 45). Yet, he identified only seven of the 22 VOCs present in the Molhave study as being present also in AvJet. In addition, he conceded that no one individual chemical in AvJet was likely to have caused Ms Cavallo's adverse reaction; rather, he stated, "it's the combination of the components [of AvJet] that caused it." (Monroe Tr., Vol. 1, at 84). The authors of the Koren study made a similar observation regarding the Molhave study:

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that "there is little information on JP-5 toxicity in humans." Porter, supra note 17, at 655.

[20] Porter also notes that "[s]everal cases of purposeful inhalation, intoxication, and addiction to gasoline vapors have been reported. . . . Symptoms associated with cerebral intoxication caused by intentional inhalation of gasoline vapors include: confusion, lack of self-control, excitement, combativeness, blurred vision, incoordination, depression, lethargy, headaches, roaring in the ears, trembling, nausea, burning in the chest, constriction in the throat, and staggering gait. Severe exposure results in dyspnea, cyanosis, delirium, coma, seizures, and death." Porter, supra note 17, at 655.

> Because no single chemical would be expected to cause a reaction, Molhave hypothesized that *the sum of all the VOCs present in the mixture*, rather than any single constituent chemical, may be the cause of the effects observed in his study.

Koren, *supra* note 15, at 41 (emphasis added). Thus, both the authors of the studies and Dr. Monroe himself caution against extrapolating the findings regarding the effects of one mixture in assessing the effects of a substantially different mixture. Furthermore, Dr. Monroe admits that the dose-response relationships observed in the Molhave and Koren studies would be dependent upon the combination of chemicals used, and yet he concedes he does not know how the numbers would be affected by changing the chemical components used in the studies to resemble those of AvJet or kerosene. (Monroe Tr., Vol. I, at 90-92, Vol. II, at 46). Finally, even if the chemicals used in the Molhave and Koren studies were identical to AvJet, Dr. Monroe does not explain why the short-term effects noted there are consistent with the long-term effects claimed here. While Rule 702 does not necessarily mandate that the expert find a study linking the exact chemicals at the exact exposure levels with the exact illnesses at issue, it does require that the expert demonstrate a scientifically valid basis for projecting the findings of a study identifying a different chemical-illness relationship to the proffered causal theory. Nowhere does Dr. Monroe explain why the dose-response figures found in these studies and the ailments observed there can reliably be transferred to the case at bar.

The Bascom report appears even less germane, as the particular carpet fiber VOCs are not identified, and, as is common with anecdotal case reports, no dose-response relationship was established. Nor is Dr. Monroe's reliance on the Porter case report explained in any organized or coherent way. Although the chemicals found in JP-5 fuel presumably

bear a closer resemblance to AvJet than does the VOC mixture of indoor air pollutants contained in the Molhave and Koren studies, Dr. Monroe acknowledges that he does not specifically know the differences between AvJet and JP-5.[21] Nor is there any way of knowing the concentration of vapors to which the aviators were exposed when their cockpit became "overwhelmed" with the fuel fumes.[22] In addition, even at this apparently high concentration level, the reported physical effects were of brief duration. While the Porter study supports the conclusion that at some level, fuels (as all chemicals) can have some adverse health effects, it does little to satisfy the second step in the methodology: consulting the published scientific literature to identify the exposure level and duration necessary to produce the given injuries.[23]

Dr. Monroe's conclusion that the AvJet spill caused Ms. Cavallo to become "sensitized" to petroleum hydrocarbons and various other chemicals finds even less direct support in the literature. Because none of the previously referenced studies reports any long-term effects from the

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[21] Porter indicates that JP-5 fuel contains numerous additives, including "antioxidants, metal deactivators, corrosion inhibitors, fuel system icing inhibitors, and an electrical conductivity additive," all of which "individually or in combination, could have toxic effects on the brain." Porter, *supra* note 17, at 2. By contrast, Dr. Monroe does not know whether AvJet contains any such additives. (Monroe Tr., Vol. I, at 91).

[22] While an exact concentration is unknown, the relatively small size of a cockpit and the fact that the aviators were "overwhelmed" by fumes suggests that the concentration of vapors to which the aviators were exposed was significantly greater than the level alleged here.

[23] As noted earlier, the fact that the Bascom and Porter articles are anecdotal case reports renders their findings less reliable in establishing causation. *See supra* note 18. The authors of the Koren study apparently agree. Noting the scarcity of controlled research on the effects of various VOCs, they stressed that it is "important to perform studies in which human volunteers are exposed to known amounts of specific pollutants in a controlled setting." Koren, *supra* note 15, at 40.

various toxic exposures, Dr. Monroe relies upon a different group of studies to support his "increased sensitivity" diagnosis. Specifically, he relies heavily on studies regarding the relatively recent and apparently quite controversial syndrome of Multiple Chemical Sensitivity ("MCS"), as well as on studies concerning Reactive Upper Airways Disease ("RUDS") and Reactive Airways Dysfunction Syndrome ("RADS").[24] Although Dr. Monroe has not definitively categorized Ms. Cavallo's "sensitivity" illness as one of these syndromes, he seems to suggest that she may be suffering from at least one of them.[25]

Ms. Cavallo does not attach copies of these studies to her legal memoranda, but Dr. Monroe provides summaries of studies involving RUDS and MCS in his report. From these, it appears that RUDS is a "persistent chronic rhinitis condition" that may result from unidentified "chemical exposure". (Monroe Rpt. at 3). According to Dr. Monroe, the "chief complaint of patients with RUDS is chemical sensitivity," and

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[24] *See* William J. Meggs, *Neurogenic Inflammation and Sensitivity to Environmental Chemicals*, 101 Envtl. Health Perspective 234 (1993); William J. Meggs, *RADS and RUDS -- the Toxic Induction of Asthma and Rhinitis*, 32 Clinical Toxicology 487 (1994); William J. Meggs, et al., *Rhinolaryngoscopic Examination of Patients with the Multiple Chemical Sensitivity Syndrome*, 48 Arch. Envtl. Health 14 (1993); J. E. Cone, et al., *Patients with Multiple Chemical Sensitivities: Clinical Diagnostic Subsets* among an occupational Health Clinic Population, 2 Occup. Med. State of the Art Reviews 721 (1987).

[25] Dr. Monroe's testimony is somewhat unclear with respect to whether he believes Ms. Cavallo suffers from one of these syndromes. At one point, when asked whether Ms. Cavallo suffers from a condition known as Solvent Intolerance, RUDS, PADS, or MCS, Dr. Monroe responded "well, as expressed in my report, my opinion is that she's suffering from the irritant effects of petroleum hydrocarbons. I really have not attempted to classify her condition beyond that." (Monroe Tr., Vol. II, at 15). Yet, at other times, he opined that her condition was consistent with RUDS, MCS, and to a lesser degree, Solvent Intolerance. (Monroe Tr., Vol. II, at 12-13).

he notes that in one study, 100% of the patients with RUDS also had MCS. (Monroe Rpt. at 3). In describing a study of 10 patients with MCS, Dr. Monroe notes that "all the patients had an initial chemical exposure, which was followed by multiple physical and mental complaints in response to subsequent exposure to a variety of odorous organic chemicals." (Monroe Rpt., at 4). Both RUDS and MCS appear to be general terms describing individual's sensitization to any number or type of chemicals. None of the studies dealt with the effects of exposure to AvJet, nor did they identify dose-response relationships for any of the chemicals involved. Thus, the missing link between the studies on MCS and RUDS and Dr. Monroe's conclusion regarding Ms. Cavallo's heightened sensitivity to petroleum hydrocarbons is a scientifically valid basis for the conclusion that AvJet (as opposed to chemicals generally) can cause these syndromes at an exposure of no more than 61 mg/m^3 for a duration of no more than 30 minutes.

In this respect, these studies do little to further Dr. Monroe's opinion, other than to support the view that there is such an illness as chemical sensitivity that can be caused by exposure to some chemicals. But even that view is controversial. *See*, e.g., *Bradley v. Brown*, 852 F. Supp. 690, 699 (N.D. Ind.) (quoting Dr. Meggs, author of most of the studies upon which Dr. Monroe relies, as acknowledging that the etiology of MCS "is as controversial as the syndrome itself" and that his etiological model is "speculative"), aff'd 42 F.3d 434 (7th Cir. 1994); *Graham v. Canadian Nat'l Ry. Co.*, 749 F. Supp. 1300, 1310-11 (D. Vt. 1990) (describing MCS as "not clearly defined" and the "subject of disagreement in the medical community"); *see also* (Rodricks Rpt., at 13 (stating that "the majority of individuals in the medical and scientific communities have great skepticism as to whether MCS is a verifiable syndrome and whether it is caused by chemical

exposure")); (Witorsch[26] Rpt., at 16-17 (noting "considerable doubt in the scientific medical community regarding the legitimacy of MCS as a valid nosologic/diagnostic entity")). Apparently cognizant of this weakness, Ms. Cavallo protests that Dr. Monroe does not conclude that she suffers from MCS. She writes:

> The defendants attempt to mischaracterize the opinions of both Dr. Bellanti and Dr. Monroe as being based some how upon the *controversial theory of 'Chemical sensitivity'*. Dr. Bellanti uses the term in an immunological sense and Dr. Monroe in an irritant sense Dr. Monroe additional [sic] states in his deposition that he made no attempt to classify Ardith Cavallo's injuries as being attributable to chemical sensitivity.

(Mem. in Opp. of Mot. for Sum. Jud., at 13 n. 36) (emphasis added). Nor did Dr. Monroe categorize her condition as RUDS. But while this disclaimer effectively avoids the pitfalls of having to rely upon the questionable scientific validity of MCS and RUDS, it also undermines Dr. Monroe's reliance on the studies for his asserted purpose. If Dr. Monroe's conclusion that Ms. Cavallo has been "sensitized" in an "irritant sense" is different from a conclusion that she suffers from MCS or RUDS, then it is hard to see how the MCS and RUDS studies support his causation conclusion. The incongruence of Ms. Cavallo's argument is readily apparent, and her position is self-defeating. Without a better explanation, or indeed, an explanation at all, of what Ms. Cavallo's "increased sensitivity" illness is, how it is caused, and why

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[26] Dr. Philip Witorsch is a pharmacologist and toxicologist. He was retained by Star as an expert in this case.

MCS and RUDS literature supports it, Ms. Cavallo's position is untenable.

The reliability of Dr. Monroe's opinion that the AvJet spill caused Ms. Cavallo's chronic condition is further undermined by the fact that the information that has been gathered specifically on AvJet suggests that no ill effects would be expected from exposure to AvJet for the duration and at the concentration alleged in this case.[27] As described by Dr. Rodricks in his report, Threshold Limit Values ("TLVs") have been established by the American Conference of Governmental Industrial Hygienists for petroleum compounds related to aviation fuel. These TLVs are based upon "the best available information from" human and animal studies as well as industrial experience, and "represent airborne concentrations of substances to which nearly all workers may be repeatedly exposed day after day without adverse health effects." (Rodricks Rpt., 7-8). According to Dr. Rodricks' unrefuted assessment, the TLVs for aviation fuel, "which are designed to protect workers exposed 8 hours [per] day on a chronic basis," exceed the worst-case concentration to which Ms. Cavallo may have been exposed (61 mg/m^3) on one evening by a factor of more than 10. (Rodricks Rpt., at 8). Furthermore, Dr. Rodricks explained that he consulted the toxicology literature to determine the "no observed effect levels" ("NOELs") and "lowest observed effect levels" ("LOELs") in humans for acute exposure to jet fuels, kerosene, diesel, and gasoline. This consultation revealed that "the

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[27] At several points in her memoranda, Ms. Cavallo resorts to evidence that AvJet is toxic, and that Star knew it to be so, in an effort to support her experts' opinions of causation. (Mem. in Opp. to Defs' Mot. in Lim., at 3-4 (citing EPA order)); (Supp. Mem. in opp. of Mot. for Sum. Jud., at 3-5 (citing Texaco Material safety Data Sheet)). Yet, as noted earlier and as readily conceded by Star, there is no doubt that AvJet, as all chemicals, can be toxic. As Paracelsus taught long ago, toxicity is a function of dose. Thus, the question for causation purposes is: At what levels of exposure do what kinds of harm occur?

worst-case air concentration for Mrs. Cavallo's exposure modeled by plaintiff's expert (61 mg/m^3 = 9ppm) was at least 15 times lower than the NOELs and LOELs observed in humans." (Rodricks Rpt., at 9).[28] While Ms. Cavallo contends that these NOELs, LOELs, and TLVs are heavily biased toward industry, a proposition that may well be true, she has not Produced any alternative study, literature, or source that supports her conclusion that exposure to 61 mg/m^3 of AvJet for a relatively short duration could produce the chronic illnesses from which she allegedly suffers. Cf. Conde, 24 F.3d at 814 (stating that while the plaintiffs "cite published critiques of [the defendants'] studies, the critiques only underscore the need for further studies, and do not . . . establish causation").

3. Summary

In sum, Dr. Monroe's theory that Ms. Cavallo's exposure for 5-30 minutes to a 61 mg/m^3 concentration of AvJet caused her chronic conjunctivitis and sinusitis, or her "increased sensitivity" to petroleum hydrocarbons, lacks many of the indicia of reliability listed in *Daubert*. Chiefly, there is no support for this causation theory in the scientific literature. And to the extent that it has been tested (through establishment of TLVs, NOELs, and LOELs), the theory fails. Similarly, there is no evidence that Dr. Monroe's causation theory is supported in the scientific community. Because of this deviation from the scientific method, which the Fourth Circuit has defined as "subjecting testable hypotheses to the crucible of experiment in an effort to disprove them," Dr. Monroe's opinion cannot be deemed "scientific knowledge." *United States v. Bynum*, 3 F.3d 769, 773 (4th Cir. 1993), *cert. denied*, __ U.S. __, 114 S. Ct. 1105 (1994).

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[28] He went on to note that "the worst-case air concentration modeled by Star's experts was at least 15,000 times lower than the NOELs and LOELs observed in humans." (Rodricks Rpt., at 9).

Although Dr. Monroe found support in the literature for a conclusion that exposure to similar levels of a different mixture of volatile organic compounds produce somewhat similar, short-term, effects, or that exposure to higher levels of a similar substance produce different, short-term effects, he is unable to provide any scientifically valid basis to support the leap from those studies to his opinion in this case. Similarly, the only literature arguably supporting such an illness as chronic chemical sensitivity is of questionable scientific validity and, more importantly, does not establish the link between AvJet and these illnesses. Thus, while the agreed-upon methodology appears to be scientifically valid, it does not appear to have been faithfully applied. *See Paoli R.R.*, 35 F.3d at 745 (noting that "any step that renders the analysis unreliable under the *Daubert factors renders the expert's testimony inadmissible. This is true whether the step completely changes a reliable methodology or merely misapplies that methodology*") (emphasis in original). In other words, like the circumstances in *Chikovsky* and *Schmaltz*, there is a lack of "fit" between the studies relied upon and the conclusion reached. *Chikovsky*, 832 F. Supp. at 346; *Schmaltz*, 878 F. Supp. at 1122. *See also Bradley*, 852 F. Supp. at 698 ("scientific expert opinion testimony is allowed on the rationale that the expert can tie the facts of a particular case to tested scientific theory"); *Casey v. Ohio Med. Prods*, 877 F. Supp. 1380, 1385 (N.D. Cal. 1995) (study showing causal link between halothane and cirrhosis of the liver not scientific evidence of causal link between halothane and chronic active hepatitis). As a result, Dr. Monroe's opinion is not "scientific knowledge" and must be excluded.

B. Dr. Bellanti

Dr. Bellanti is an immunologist. In his written report, he concludes that "Mrs. Cavallo suffers from chronic sphenoid sinusitis and pulmonary dysfunction as a direct and proximate

cause of her exposure to aviation jet fuel in December, 1991." (Bellanti Rpt., at 4). He further concludes that the spill "traumatized" and "sensitized" her "to various volatile organic compounds including petroleum vapors and some household chemicals." (Bellanti Rpt., at 4).[29] Thus, like Dr. Monroe, Dr.

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[29] These conclusions, which attribute Ms. Cavallo's injuries to the December 1991 spill, appear to differ somewhat from Dr. Bellatni's initial deposition testimony. During his first of three depositions, Dr. Bellanti resisted attributing the cause of Ms. Cavallo's ongoing illnesses to one massive event rather than to an overall continuum of exposure. For instance, with respect to whether the spill caused any long-term effects in Ms. Cavallo, the following testimony occurred:

> Q: Do you have any opinion, Dr. Bellanti, on whether Mrs. Cavallo sustained any long-term damage or injury as a result of the separate, discrete, alleged exposure to petroleum products in December 1991?
>
> A: The basis of my opinion was made on the bases of the single exposure and the *continuing exposure*. I do not know. I do not have any opinion or I didn't make any opinions on the basis of long-term damage as a result of a single exposure.

(Bellanti Tr., at 21-22) (emphasis added).

> Q: Now, as an expert witness in this case, can you render an opinion on the question whether Mrs. Cavallo sustained any lasting damage or injury as a result of the one alleged event of exposure in December 1991?
>
> A: Without knowing the details of intensity of exposure, of duration of exposure, of the time of exposure, concentration, I don't -- you know, it would be *idle speculation* for me to try to answer that question.

(Bellanti Tr., at 43-44) (emphasis added). Although it is possible that these responses could be considered consistent with his opinion that she was "sensitized" (as this implies newfound sensitivity to continued exposures rather than chronic illnesses apart from the continued exposures), Dr.

Bellanti opines that the AvJet spill caused Ms. Cavallo's chronic conditions.

There is no question that Dr. Bellanti is qualified to testify regarding the nature of Ms. Cavallo's illnesses: namely, that she suffers from chronic sphenoid sinusitis and pulmonary dysfunction. Rather, the focus of the dispute is whether his opinion regarding the cause of these illnesses is scientifically valid and therefore admissible under *Daubert*. As with Dr. Monroe, resolution of this question necessarily requires an analysis of the reliability of the methodology employed by Dr. Bellanti, as well as careful scrutiny of his adherence to, and application of, that methodology.

Bellanti's initial repsonses to question regarding "sensitivity" are also puzzling:

> Q: Do you have any opinion of whether Mrs. Cavallo was sensitized to petroleum products or any other substances as a rseult of exposure in December 1991?
>
> A: I have no evidence for that.

(Bellanti Tr., at 58).

> Q: Is it fair to say that you have not in either your treatment of Mrs. Cavallo or your review of her medical records seen any evidence that she was sensitized as a result of exposure to petroleum products?
>
> A: I have never -- that's never come into my thinking. I have no evidence of that

(Bellati Tr., at 61). Nevertheless, the Court accepts the conclusions contained in Dr. Bellanti's report for purposes of these proceedings and will presume either that Dr. Bellanti has modified his opinion since his deposition or that he interpreted the above questions as using the word "sensitized" in a different manner than intended in his report.

Although neither party clearly explains the methodology applied by Dr. Bellanti,[30] it appears from a review of his written report as well as his deposition testimony that he primarily applied a methodology of differential diagnosis.[31] Thus, he determined from a review of Ms. Cavallo's medical history, from her description of the spill incident, from his initial examination of her, and from the timing of the spill in relation to her development of symptoms, that her exposure to the petroleum hydrocarbons could have caused her chronic illnesses. Dr. Bellanti then examined other

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30 In its motion in limine, Star notes that Dr. Bellanti "did not even attempt to follow the procedures of toxicology" in forming his opinion. (Mem. in Sup. of Defs' Mot. in Lim., at 13). In her short response concerning Dr. Bellanti, Ms. Cavallo does not clearly identify the methodology he used, stating only in quite a conclusory fashion that:

> [h]is independence, impartiality and lack of bias as an expert in his field is [sic] unchallenged. He has examined her innumerable times and conducted a vast number of diagnostic tests and procedures to rule out other causes of Mrs. Cavallo's medical condition. Dr. Bellanti did evaluate and consider the chemicals or concentrations of vapors to which plaintiff was allegedly exposed; he did assess the likelihood that exposure to AvJet vapors at the level plaintiff alleges could cause the specific illnesses she alleges; and he cited scientific literature to support his opinion that exposure to Av-Jet [sic] vapors could have caused illnesses of the sort plaintiff alleges (See Bellanti Exhibits 31-34).

(Mem. in opp. to Defs' Mot. in Lim., at 11). This passage appears to reflect that Ms. Cavallo contends that Dr. Bellanti applied both 1) the toxicology methodology previously discussed to determine whether the AvJet spill could have caused her injuries and 2) a differential diagnosis to rule out other possible causes.

31 Differential diagnosis describes "a process whereby medical doctors experienced in diagnostic techniques provide testimony countering other possible causes . . . of the injuries at issue." *Hines v. Consolidates Rail Corp.*, 926 F.2d 262, 270 n.6 (3d Cir. 1991).

Possible causes of her symptoms (such as her history of smoking 1.5 packs a day for at least 20 and as much as 40 years,[32] Possible allergies, possible MSG in the Chinese food eaten on the night of the spill, and Ms. Cavallo's exposure to a previous spill in 1960), and ruled out each one.[33]

The process of differential diagnosis is undoubtedly important to the question of "specific causation".[34] If other possible causes of an injury cannot be ruled out, or at least the probability of their contribution to causation minimized, then the "more likely than not" threshold for proving causation may not be met. But, it is also important to recognize that a fundamental assumption underlying this method is that the final, suspected "cause" remaining after this process of elimination must actually be capable of causing the injury. That is, the expert must "rule in" the suspected cause as well as "rule out" other possible causes. And, of course, expert opinion on this issue of "general causation" must be derived from a scientifically valid methodology.

The methodology followed by toxicologists in determining whether a particular chemical could have caused a

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[32] The number of years that Ms. Cavallo smoked is variously reported in the record as 20 and 40.

[33] Unlike Dr. Bellanti, Dr. Witorsch, one of Star's medical experts, concludes that Ms. Cavallo's chronic obstructive pulmonary disease is "entirely consistent" with her history of cigarette smoking. He also believes her sinusitis is consistent with common environmental allergens in the Washington, D.C. metropolitan area, with her history of cigarette smoking, and with congenital or developmental abnormalities involving her nose or paranasal sinuses. (Witorsch Rpt., at 15).

[34] "General causation" refers to whether X can cause Y. Here, the issue of general causation is whether exposure to AvJet vapors at the asserted concentration and duration could have caused the alleged injuries. On the other hand, "specific causation" refers to whether X did cause Y in a given case. *See Casey*, 877 F. Supp. at 1383. It is in determining specific causation that differential diagnosis is helpful.

given injury has been previously discussed in reference to Dr. Monroe. *See supra* 2 § II.A.2. Although Dr. Bellanti is not himself a toxicologist, he must nonetheless apply the principles and methods of toxicology if he is to give an opinion on an issue relating to that specialty. *Cf. Wade-Greaux v. Whitehall Lab., Inc.*, 874 F. Supp. 1441, 1478 (D.V.I.) (stating that "[a]lthough Plaintiff's expert witnesses purport to hail from different disciplines, such as toxicology, pharmacology and Pediatric pathology, each is offering an opinion with respect to human birth defects and their causes -- i.e., the field of teratology" and therefore "the methodologies they employ must be compared with the methodology generally accepted by the community of teratologists"), *aff'd* 46 F.3d 1120 (3d Cir. 1994). And despite Ms. Cavallo's suggestions to the contrary, *see supra* note 30, Dr. Bellanti did not do so.

With respect to the level of Ms. Cavallo's exposure, Dr. Bellanti concluded only that she sustained a "massive exposure" (Bellanti Tr., at 231). He candidly acknowledged that in forming his opinion, he was unaware of the duration and intensity of exposure.[35] In addition, he repeatedly

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[35] Like Dr. Monroe, *see supra* note 12, Dr. Bellanti's reasoning process with respect to causation at times appeared somewhat circular. Having indicated that he did not know the details of duration and intensity of exposure, he nonetheless concluded:

> I know that she was exposed for a *sufficiently long time*, and I do know from the Texaco report and from information that has been provided to me that there was a spill and that there was significant amounts of hydrocarbon in the atmosphere. Now, whether or not that was documented or not, that's -- we could look at that later, I suppose, but that [sic] there was sufficient exposure to cause her to develop symptomatology.

(Bellanti Tr., at 44) (emphasis added).

qualified his responses to deposition questions regarding levels of exposure and dose-response relationships with the reminder that he was not a toxicologist.[36]

Even assuming that he was aware of and considered the alleged 61 mg/m^3 level of exposure, Dr. Bellanti could cite no studies or published literature to support adverse effects from that level of exposure to AvJet. Although Dr. Bellanti cited no literature at all in his report, he referenced in his deposition testimony an article in which 286 asthmatic women were clinically evaluated.[37] While only 15.5% of those who improved clinically had come into contact with kerosene, 43.9% of those who did not improve used kerosene as a cooking fuel. For 16 of the women, their asthma developed soon after they began using kerosene.[38] The authors

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[36] For instance, the following question and answer are reported:

> Assume, please, that one were exposed to vapors from jet fuel or filtered kerosene for 15 minutes or less, what concentration or intensity of vapors would be necessary in those circumstances to cause lasting respiratory injury?
>
> [objection omitted]
>
> A: Again, this is a question that is best posed to a toxicologist. This is beyond my level of expertise. I cannot answer that question.

(Bellanti Tr., at 54)

[37] *Rodriguez de la Vega et al., Kerosene-induced Asthma*, 64 Annals of Allergy 362 (1990).

[38] Because neither party submitted a copy of this article, and Dr. Bellanti did not describe the article in his report, these figures are taken from the summary of the article provided in Dr. Monroe's written report. While Dr. Monroe cited this article in his long list of references, he did not include it in his deposition testimony among the articles upon which he chiefly relied in forming his opinion

concluded that exposure to kerosene can cause asthma. While this article involves kerosene, which is substantially similar to AvJet, Dr. Bellanti acknowledged that it provided no information regarding the levels of kerosene to which these women were exposed. Nor does it lend support for the notion that one brief encounter with a given level of kerosene, rather than repeated exposures over a lengthy period, can produce the sort of chronic illnesses from which Ms. Cavallo suffers.

Prior to his third deposition, Dr. Bellanti reviewed various literature pertaining to the disease RADS.[39] He then cited these studies in his deposition testimony for the general proposition that "a single [chemical] insult can cause damage which can be permanent and long lasting." (Bellanti Tr., at 328). Yet significantly, Dr. Bellanti was only willing to say that Ms. Cavallo "could" have RADS, a facially speculative diagnosis. (Bellanti Tr., at 331-30). Furthermore, even if Dr. Bellanti had definitively diagnosed RADS, none of the studies cited dealt with the effects of AvJet or kerosene, nor did they establish dose response relationships for the chemicals that

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[39] The cited studies are:

1. Olav Axelson & Christer Hogstedt, *The Health Effects of Solvents, in Occupational Medicine* 764 (3d ed. 1994).

2. Stuart M. Brooks et al., *Reactive Airways Dysfunction Syndrome (RADS): Persistent Asthma Syndrome after High Level Irritant Exposures*, 88 CHEST 376 (1985).

3. David G. Kern, *Outbreak of the Reactive Airways Dysfunction Syndrome after a Spill of Glacial Acetic Acid*, 144 Amer. Rev. Resp. Diseases 1058 (1991).

4. Denyse Gautrin et al., *Is Reactive Airways Dysfunction Syndrome a Variant of Occupational Asthma?*, 93 J. Allergy & Clinical Immunology 12 (1994).

were involved.[40] Only the Kern article attempted to quantify the level of exposure to a chemical necessary to develop RADS, and that article involved exposure to glacial acetic acid. Even Dr. Bellanti admitted that the figures in this study "may not be completely extrapolable [sic]" to the case at bar. (Bellanti Tr., at 333).

Thus, it is clear that Dr. Bellanti did not follow the accepted toxicology methodology in formulating his opinion of causation in this case. At bottom, his opinion is founded primarily on the temporal connection between the spill and the development of Ms. Cavallo's symptoms,[41] as well as on his subjective, unverified, belief that AvJet can cause the types of injuries from which Ms. Cavallo suffers. This is not the method of science. *See Schmaltz*, 878 F. Supp. at 1122 (stating that "[i]t is well settled that a causation opinion based solely on a temporal relationship is not derived from the scientific

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[40] At oral argument, the attorneys for Ms. Cavallo cited the Hudnell study, which does not deal with PADS, as providing dose-response figures that support Dr. Bellanti's opinion. H. Kenneth Hudnell et al., *Exposure of Humans to Volatile Organic Mixture II: Sensory*, 47 Archives Envtl. Health 31 (1992). This study involved virtually the identical combinsation of 22 BOCs used in the Molhave and Koren studies, *see supra* notes 14-15, and, like the others, was designed to analyze sick building syndrome. Sixty-six health males were exposed to a concentration of 25 mg/m^3 of the 22 BOC mixture for 2.75 hour periods, during which increases in eye and throat irritation, headache, and drowsiness were observed. Like the other studies, no long-term effects were reported. Just as Dr. Monroe failed to demonstrate any scientifically valid basis for transferring the Molhave and Koren data to Ms. Cavallo's exposure to AvJet, *supra*, Dr. Bellanti has not provided a sufficient explanation for his purported reliance on the Hudnell study.

[41] Dr. Bellanti essentially admits that the temporal relationship between the exposure and her symptoms is a principal factor underlying his opinion. (Bellanti Tr., at 76) (stating that "I think the fact that the history suggests that things took a turn for the worse after '91 is one of the major aspects in my assessment that there was a causal relationship to the exposure and her present condition").

method and is therefore insufficient to satisfy the requirements of [Rule] 702"). Because, like Dr. Monroe, Dr. Bellanti significantly departed from the appropriate methodology, his opinion is not based on the scientific method and is inadmissible under Rule 702.

C. Summary

In sum, neither Dr. Monroe nor Dr. Bellanti sufficiently adhered to the established toxicology methodology in forming their conclusions that Ms. Cavallo's exposure to AvJet vapors from the December 1991 spill caused her various chronic illnesses. Their testimony, therefore is not "supported by appropriate validation" as required by *Daubert*, __ U.S. __ at __, 113 S. Ct. at 2795, and is ultimately unreliable. In the final analysis, the opinions of Drs. Monroe and Bellanti are based largely on hypothesis and speculation. This is not to say that the doctors are insincere in their opinions, or that their opinions may not some day be validated through scientific research and experiment.[42] It may well be that the AvJet spill forever "sensitized" Ms. Cavallo to petroleum vapors and various other household chemicals. But the published scientific literature and test results simply do not support that conclusion at this time.[43] And the price paid for this seemingly stringent standard of reliability is that, unavoidably, some legitimate injuries will be left unredressed. *See Daubert*,

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[42] Nor are the general qualifications of Dr. Monroe and Dr. Bellanti questioned here. Both men possess impressive credentials and have substantial experience in their respective fields.

[43] This is often true in "the growing field of hazardous-substance litigation, where the causal relationship between exposure to a hazardous substance and subsequent symptoms may be hypothesized, but not yet tested and proven to the legally required degree of certitude." *Bradley*, 852 F. Supp. at 696 (citing *Daubert*, __ U.S. __ at __, 113 S. Ct. at 2796-99).

__ U.S. __ at __, 113 S. Ct. at 2798-99 (recognizing that "in practice, a gatekeeping role for the judge, no matter how flexible, inevitably on occasion will prevent the jury from learning of authentic insights and innovations").

Also worth emphasizing is that the circumstances of each case are unique, and the absence of scientific validation through published studies and tested hypotheses is not always fatal to an expert's opinion. Specifically, there may be instances where the temporal connection between exposure to a given chemical and subsequent injury is so compelling as to dispense with the need for reliance on standard methods of toxicology. Thus, if a person were doused with chemical X and immediately thereafter developed symptom Y, the need for published literature showing a correlation between the two may be lessened. Similarly, statistical evidence can be persuasive in certain contexts. For instance, if a known chemical is accidentally introduced into a company's ventilation system, and all of the workers exposed immediately develop the same adverse reaction, then the episode itself may be sufficiently indicative of causation. This, however, is not such a case,[44] and the failure to adhere to the applicable methodology renders inadmissible the expert opinions proffered here.

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[44] That Ms. Cavallo's initial consultations with physicians failed to disclose any significant injury, and that her chronic sinusitis and pulmonary disease were diagnosed only one and a half years after the spill, renders the temporal relationship between the spill and her injuries less than compelling. Furthermore, there is no evidence that a substantial number of others who were exposed to vapors from the spill are experiencing similar effects. While it appears that some firemen (who dealt directly with clean-up efforts and were presumably exposed to much greater concentrations of AvJet vapors) experienced some initial adverse effects, there is no evidence in the record that any of them suffered permanent injury.

III. Summary Judgment Motion

It follows from the exclusion of the expert testimony of Drs. Monroe and Bellanti that summary judgment must be granted in favor of Star. Even assuming Star's negligence in permitting the AvJet spill, and even assuming that Ms. Cavallo suffers from the chronic illnesses she alleges, there is insufficient evidence of causation to create a triable issue of fact for the jury.

In general, expert testimony is required to prove that exposure to a toxic substance caused a certain injury or illness.[45] Without reliable expert testimony linking Ms. Cavallo's exposure to AvJet fumes from the spill to her subsequent development of chronic respiratory problems, the jury could only speculate, based on a loose temporal relationship and not scientific fact, that a causal relationship exists. Such an inference would be impermissible, even apart from the evidence that the TLVs, NOELs, and LOELs for AvJet all substantially exceed the maximum, "worst-case" concentration to which Ms. Cavallo was exposed on the night of the spill. Therefore, summary judgment is appropriate.[46]

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[45] *See, e.g., Rohrbough by Rohrbough v. Wyeth Lab., Inc.*, 719 F. Supp. 470, 473 (N.D. W. Va. 1989) (because of "high degree of scientific complexity" in proving that vaccine caused plaintiff's injuries, expert testimony was required to prove causation), aff'd 916 F.2d 970 (4th Cir. 1990); *Porter*, 9 F.3d at 612 (expert testimony required to establish link between ibuprofen and renal failure); *Bradley*, 852 F. Supp. at 697 (stating that "plaintiffs may not make out causation vis-&-vis MCS merely by reliance upon the temporal congruity of the [exposure] and the onset of their symptoms").

[46] Summary judgment is appropriate with respect to Ms. Cavallo's claim for chronic illness, which is, it appears, the only claim she is making. *See supra* note 7. Should Ms. Cavallo consider that her complaint also encompasses the immediate and temporary effects of irritated eyes and runny nose on the night of the spill, then she may seek reconsideration, for the Court has not addressed that issue.

Prior to *Daubert*, courts presented with this situation may have been more inclined to admit the expert testimony and allow the jury, aided by vigorous cross-examination, to sort out the relative reliability of opposing expert opinions. But *Daubert* recognized the danger in this approach. By definition, experts testify to matters beyond the common understanding of the jury, and, as a consequence, their opinions can carry great weight. Given this, *Daubert* assigned district courts a more vigorous role to play in ferreting out expert opinion not based on the scientific method. At the same time, however, courts must be cautious to avoid weighing the relative merits of opinions that are derived from scientifically valid methodology or assuming the role of amateur scientist. In granting the motion in limine, thereby paving the way for summary judgment, the Court scrupulously attempted to walk this fine line: analyzing the experts' adherence to the scientific methodology, while declining to weigh the evidence before it. Significantly, nothing in the Court's review and analysis of this issue required any scientific training.[47] Rather, the Court did nothing more than use the customary legal tools of logical reasoning[48] to carry out its gatekeeping function.

IV. Conclusion

For the foregoing reasons, the motion in limine and the motion for summary judgment are granted.

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[47] While I have an undergraduate degree in science, almost 35 years has passed since I have had any professional involvement with science. Moreover, the Court's clerks are both blissfully innocent of any scientific training. Proper application of *Daubert* simply does not require that district judges be trained scientists.

[48] Although the Court's application of these customary legal tools may ultimately be deemed erroneous, the error would stem from flawed legal reasoning and not from lack of scientific training

An appropriate order has already issued with respect to the motion in limine, and an order reflecting the disposition of the summary judgment motion will issue forthwith.

/s/ T.S. Ellis, III
T. S. Ellis, III
United States District Judge

Alexandria, Va.
July 10, 1995

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
Alexandria Division

ARDITH CAVALLO,
Plaintiff,

v.

STAR ENTERPRISE, et al.
Defendants.

Civil Action No. 94-1499-A

Entered: July 10, 1995

ORDER

This matter comes before the Court on Defendants' motion for summary judgment. For the reasons stated in the accompanying Memorandum Opinion, The motion is **GRANTED.** Should Plaintiff wish to seek reconsideration pursuant to footnote 46 in the Memorandum Opinion, she has 10 days from the date of this Order to do so. Fed. R. Civ. P. 59(e).

The Clerk is directed to send copies of this Order and the accompanying Memorandum Opinion to all counsel of record.

/s/ T. S. Ellis, III
T.S. Ellis, III
United States District Judge

Alexandria, Virginia
July 10, 1995

IN THE UNITED STATES DISTRICT COURT FOR THE
EASTERN DISTRICT IF VIRGINIA
ALEXANDRIA DIVISION

ARDITH CAVALLO and LAWRENCE Cavallo,
Plaintiffs,

v.

STAR ENTERPRISE, *et, al.*,
Defendants.

CIVIL ACTION NO. 94-1499-A

Entered: January 20, 1995

MEMORANDUM OPINION AND ORDER

This matter comes before the court on a motion to dismiss certain claims and counts in the amended complaint, pursuant to Fed. R. Civ.P. 12(b) (6), and on the plaintiffs' motion to exclude certain matters not contained in the pleadings from the court's consideration of the defendants' motion. Upon consideration of the pleadings, memoranda, and appropriate exhibits of the parties, the court overrules the plaintiffs' motion and sustains the defendants' motion, and accordingly will dismiss all but the first count of the amended complaint.

This action arises out of discharges of petroleum products from the defendants' petroleum distribution terminal ("Star facility") in Fairfax County. The allegations are that the plaintiffs are owners of a residence approximately one-half mile east of the Star facility. In September or October of 1990, local officials determined and defendants acknowledged that a "petroleum release" had occurred at the facility, resulting in the discharge of toxic

substances into the local waterways, the subsurface, and the air. On the evening of December 9, 1991, while leaving a restaurant adjacent to the facility, Ardith Cavallo was directly exposed to airborne petroleum contaminates traced to a particular discharge at the facility, called the "Av-Jet Spill," which occurred at the Star facility on or about the same day. This reaction allegedly triggered in Ardith Cavallo a continuing and severe sensitivity to petroleum vapors. The plaintiffs allege that the contamination discovered in 1990, the subsequent Av-Jet spill, and subsequent activities of the defendants at the Star facility contributed and contribute to total hydrocarbon concentrations in the air at and around the plaintiffs' property. the presence of these concentrations continues to impair Ardith Cavallo's health, cause her to incur medical expenses, and limit her daily activities and her enjoyment of the plaintiffs' property.

The plaintiffs seek compensatory and trespass damages in four counts. The defendants argue that the claims contained in counts II, III, and IV are barred for one or more of the following reasons: the expiration of the applicable one- or two- year Virginia statutes of limitations; federal preemption of certain claims in courts II-IV; and failure to state a claim under the Virginia State Water Control Law, Va. Code § 62.1-44.2, et seq., in count IV.

Statutes of Limitations

This complaint was filed on November 14, 1994, pursuant to tolling agreements wherein the defendants agreed not to plead limitations arising after December 8, 1993. The plaintiffs concede that the applicable statute of limitations for the personal injuries of Ardith Cavallo is two years and the applicable statute of limitations for the trespass and statutory claims is one year. Therefore, the negligence causes of action in counts I and II are only barred to the extent that

they accrued prior to December 8, 1991, and the trespass and statutory causes of action in counts III and IV are only barred to the extent that they accrued prior to December 8, 1992.

Although the defendants argue that the cause of action in counts II is based in part on the petroleum contamination discovered in 1990, the court treats all the allegations in counts I and II as stating claims for Ardith Cavallo's injuries arising out of the Av-Jet spill on December 9, 1991.[1] The prior contamination is only relevant insofar as it contributes to the conditions in the atmosphere to which Ardith Cavallo is exposed. The inclusion of allegations regarding the prior contamination does not time-bar the claims in counts I and II. As to counts III and IV, the court finds that the allegations of continuing discharges sufficiently state cause of action accruing after December 8, 1992.

Federal Preemption

While the court finds that none of the counts of the amended complaint are wholly time-barred, the plaintiffs' claims must accordingly be based on discharges that occurred within the limitations periods defined above. However, the defendants argue that any damage claims resulting from discharges released from the Star facility in compliance with administrative orders of the Environmental Protection Agency ("EPA Orders") are barred under the doctrine of preemption. *Feikema v. Texaco, Inc.*, 16 F.3d 1408 (4th Cir. 1994). The plaintiffs argue that the court may not take judicial notice of the EPA Orders on the defendants' motion to dismiss, and further argue that, under *Feikema*, the EPA Orders do not preempt a state law claim for damages.

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[1] The court notes that the claims for relief in counts I and II are identical.

The court finds that it is appropriate to take judicial notice of the EPA Orders for consideration of the defendants' motion to dismiss. These orders are a matter of public record. Contrary to the plaintiffs' motion to exclude, the orders are not relied on for the EPA's factual findings regarding the defendants' activities at the Star facility. Rather, they are relied upon solely to show the scope and legal authority of the federal government's control of remediation efforts at the site. Furthermore, the complaint itself alleges that the EPA took control of activities conducted at and around the Star facility relating to identifying, controlling and stabilizing the petroleum release. For these reasons, the plaintiffs' motion to exclude will be denied.

The court concluded that the damages claims are preempted insofar as they arise from remediation efforts under the scope of the EPA Orders. The damages sought here distinguish the case from those damages which were allowed in *Feikema*. Damage liability for activities in conformity with the EPA Orders conflicts with the federal interest as effectively as an injunction. *See Feikema*, 16 F.3d at 1418 (Murnaghan, J., concurring).

Conclusions

The court reads all of the complaint allegations of release subsequent to September of 1991, excluding the Av-Jet spill in December of 1991, as falling within the scope of activities approved and/or directed by the EPA Orders.[2] The

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[2] The court has reached this conclusion after comparing the complaint paragraphs numbered 22, 23, 72(e) and (f), and 87 with the remediation directives contained in "Administrative Order by Consent for Emergency Protective Measures, " EPA Docket No. RCRA-3-004-IT, S (Sept.23, 1991) and "Administrative Order to Protect the Public Health and Welfare and the Environment," EPA Docket No. III-93-003-CW, R

combined effect of the applicable limitations period and the federal preemption results in the elimination from count II of every alleged petroleum release by the defendants which cannot also be found in count I. As noted above, the relief sought in the two counts is also identical. Furthermore, all of the alleged releases within the limitations period applicable to counts III and IV also fall under the foregoing preemption analysis.[3] For these reasons, it is hereby ORDERED that:

1. The plaintiffs' motion to exclude certain matters outside of pleadings is denied.

2. The defendants' motion to dismiss is granted as to counts II, III, and IV of the amended complaint, and this case shall go forward on count I.

/s/
United States District Judge

Alexandria, Virginia
January 20, 1995

(April 9, 1993). Copies of the two EPA Orders are attached to the memorandum of the defendants.

[3] The defendants also assert that the count IV fails to state a claim under the Virginia State Water Control Law because that law only allows recovery for damages due to a discharge of oil in liquid form, not for damages due to the emission of vapors or fumes. The court does not agree that the state statute is so limited. Although the definition of "oil" may or may not include airborne petroleum particles, Va. Code § 62.1-44.34:14, the airborne contamination, and the plaintiffs' resulting injury, are caused by the discharge of oil. Va. Code § 62.1-44.34:18(C).

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
Alexandria Division

Civil Action No. 94-1499-A

ARDITH CAVALLO,
Plaintiff,

v.

STAR ENTERPRISE, et al.,
Defendants.

Entered: August 10, 1995

ORDER

This matter comes before the Court on Plaintiff's motion for reconsideration or to amend and alter the judgment pursuant to Rule 59(e) of the Federal Rules of Civil Procedure. By Order dated July 10, 1995, and for reasons stated in an accompanying Memorandum Opinion, the Court granted summary judgment in favor of Defendants. The Court's ruling was based on its reading of the Complaint as claiming damages for long-term, permanent injuries resulting from the spill. However, in footnote 46 of the Opinion and in its July 10 Order, the Court left open the possibility for Plaintiff to seek reconsideration of the Court's ruling on the narrow ground that Plaintiff was also seeking damages for the temporary eye and nose irritation immediately following her alleged exposure to AvJet fumes. Because the Court had not considered proof of causation for those temporary injuries, the Court anticipated possible reconsideration on that limited ground.

Plaintiff filed a timely motion for reconsideration. In that motion, however, Plaintiff simply reargued matters already considered by the Court in its July 10 ruling. Therefore, by Order dated August 1, 1995, the Court denied the motion as to those matters previously considered. The Court held the remainder of the motion in abeyance in order to confirm whether Plaintiff wished to seek reconsideration on the grounds left eon in footnote 46. Therefore, in the August 1, Order, the Court granted Plaintiff until August 8, 1995 to file an appropriate memorandum if she wished reconsideration on those grounds. The Court indicated that if Plaintiff did not submit anything further by August 8, 1995, the motion would be denied in its entirety. Because Plaintiff did not file any further memorandum by the recited deadline, the Court accordingly DENIES the motion for reconsideration in its entirety.

The Clerk is directed to send copies of this Order to all counsel of record.

/s/ T. S. Ellis, III
T. S. Ellis, III
United States District Judge

Alexandria, Virginia
August 10, 1995

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
Alexandria Division

Civil Action No. 94-1499-A

ARDITH CAVALLO,
Plaintiff,

v.

STAR ENTERPRISE, et al.,
Defendants.

Entered: August 1, 1995

ORDER

This matter comes before the Court on (1) Plaintiff's motion for reconsideration or to amend and alter the judgment pursuant to Rule 59(e) of the Federal Rules of Civil Procedure, and (2) Defendants' motion to strike Plaintiff's motion for reconsideration. The Court has reviewed the submitted memoranda and documents and ORDERS as follows:

(1) Plaintiff's motion for reconsideration is DENIED IN PART AND HELD IN ABEYANCE IN PART.

(a) The motion is DENIED with respect to all matters resolved in the Court's Memorandum Opinion dated July 10, 1995. As to those matters, "Plaintiff improperly used the motion to reconsider to ask the Court to rethink what the Court had already thought through -- rightly or wrongly." *Johnson v. City of Richmond*, 102 F.R.D. 623, 623 (E.D. Va. 1984) (quoting *Above The Belt, Inc. v. Mel Bohannon Roofing, Inc.*, 99 F.R.D. 99 (E.D. Va. 1983)).

(b) With respect to the issue regarding whether Plaintiff's complaint claims damages for temporary injuries allegedly suffered immediately following the spill (and if so, whether summary judgment is appropriate on t hat claim), the motion is HELD IN ABEYANCE. In footnote 46 of the Court's July 10, 1995 Memorandum Opinion, the Court indicated that "[s]hould Ms. Cavallo consider that her complaint also encompasses the immediate and temporary effects of irritated eyes and runny nose on the night of the spill, then she may seek reconsideration" of those claims since the Court did not consider them. Nonetheless, Plaintiff's motion for reconsideration is devoted almost entirely to matters that were considered by the Court in its Memorandum Opinion, and it is unclear whether she seeks reconsideration on the ground left open by the Court. In her memorandum in support of her motion for reconsideration, Plaintiff briefly remarks in footnote 5 that her "complaint does encompass the injuries suffered on December 10, 1991 and their continuing consequences which she intends to pursue." The Court previously ruled that Plaintiff has failed to establish causation for any "continuing consequences" of the spill, and summary judgment has been granted in favor of Defendants for such injuries. That ruling remains undisturbed. If by footnote 5 of her supporting memorandum Plaintiff is signaling her desire to pursue damages for the temporary pain and discomfort associated with her exposure to the spilled AvJet fumes on December 10, 1995 (for example, for the alleged burning sensation in her eyes that night, but not for any claimed increased sensitivity triggered by the spill or any other "continuing consequences" of the spill), then Plaintiff may submit tot he Court by August 8, 1995 at 5:00 p.m. a memorandum addressing the issues (1) whether the complaint encompasses such damages and (2) whether and how causation may be established for such damages. Defendants will have until August 15, 1995 at 5:00 to respond. If Plaintiff

makes no filing on this issue by August 8, 1995, then the motion for reconsideration will be denied in its entirety.

(2) In view of the disposition of Plaintiff's motion, Defendants' motion to strike is DENIED as moot.

Given the instant disposition of these motions, the hearing scheduled for August 4, 1995 is unnecessary and ORDERED removed from the docket.

The Clerk is directed to send copies of this Order to all counsel of record.

/s/ T.S. Ellis, III
T. S. Ellis, III
United States District Judge

Alexandria, Virginia
August 1, 1995

UNITED STATES COURT OF APPEALS
FOR THE FOURTH CIRCUIT

No. 95-2540 (CA-94-1499-A)

ARDITH CAVALLO,
Plaintiff-Appellant,

and

LAWRENCE CAVALLO,
Plaintiff,

v.

STAR ENTERPRISE; TEXACO REFINING AND MARKETING (EAST), INCORPORATED; SAUDI REFINING, INC.,
Defendants-Appellees.

Entered: December 19, 1996

ON PETITION FOR REHEARING WITH
SUGGESTION FOR REHEARING IN BANC

The appellant's petition for rehearing and suggestion for rehearing in banc were submitted to this Court. As no member of this Court or the panel requested a poll on the suggestion for rehearing in banc, and

As the panel considered the petition for rehearing and is of the opinion that it should be denied.

IT IS ORDERED that the petition for rehearing and suggestion for rehearing in banc are denied.

For the Court,
/s/ Patricia S. Connor
Clerk

Supreme Court, U.S.
FILED
APR 21 1997
CLERK

No. 96-1493

In the Supreme Court of the United States

OCTOBER TERM, 1996

ARDITH CAVALLO,
Petitioner,

v.

STAR ENTERPRISE, TEXACO REFINING AND MARKETING (EAST) INC. AND SAUDI REFINING, INC.
Respondents.

ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FOURTH CIRCUIT

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24 pp

QUESTION PRESENTED

Petitioner purports to present for review the question of whether the Fourth Circuit used the proper standard in reviewing the District Court's exclusion of Petitioner's proposed experts on medical causation for failure to meet the standards of admissibility set forth in the Federal Rules of Evidence and *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993). That question is not properly presented by either the Petition or the record below.

The Petition itself does not present any *Daubert* issue. The Petition alleges that Petitioner was diagnosed with Reactive Airways Dysfunction Syndrome ("RADS"). Petitioner's expert did not offer this opinion until after the District Court had already excluded his previous, different opinion and granted summary judgment for Respondents, at which point Petitioner moved for reconsideration and for the first time presented the new opinion on RADS. The District Court properly denied the motion for reconsideration. It did not, however, apply any *Daubert* analysis to the RADS opinion.

The Question Presented in this case is therefore the following:

Did the District Court abuse its discretion in denying Petitioner's motion for reconsideration under Rule 59(e) of the Federal Rules of Civil Procedure, where Petitioner sought for the first time to offer an opinion that Petitioner had Reactive Airways Dysfunction Syndrome eight days after the District Court granted summary judgment for Respondents?

RULE 29.6 STATEMENT

Respondent Texaco Refining and Marketing (East) Inc. is a wholly-owned subsidiary of a wholly-owned subsidiary of a wholly-owned subsidiary of Texaco Inc., which is a publicly held corporation. Respondent Star Enterprise is a joint venture of respondents Texaco Refining and Marketing (East) Inc. and Saudi Refining, Inc.

In this brief, respondents Star Enterprise, Texaco Refining and Marketing (East) Inc. and Saudi Refining, Inc. will be referred to collectively as "Star."

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In the Supreme Court of the United States

OCTOBER TERM, 1996

No. 96-1493

ARDITH CAVALLO,
Petitioner,

v.

STAR ENTERPRISE, TEXACO REFINING AND MARKETING (EAST) INC. AND SAUDI REFINING, INC.
Respondents.

ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FOURTH CIRCUIT

BRIEF OF RESPONDENTS IN OPPOSITION

INTRODUCTION

Contrary to what Petitioner states in her petition, the issue she presents to this Court does not involve the standard of review that Courts of Appeals should apply to district court decisions that exclude expert testimony under *Daubert*. Petitioner challenges the exclusion of an expert opinion that she had Reactive Airways Dysfunction Syndrome ("RADS"), which is the only opinion Petitioner presents in her petition to this Court. The District Court did not exclude that opinion under *Daubert*.

Petitioner failed to explain to this Court that her experts initially opined in the District Court that she suffered from conditions other than RADS, and that these other conditions were due to causes for which Star was allegedly responsible. The District Court excluded these other opinions under *Daubert* and entered summary judgment for Star. Later, Petitioner moved for reconsideration and only then offered for the first time the new expert opinion that she had RADS. The District Court denied the motion for reconsideration as untimely. The District Court never evaluated the admissibility of the RADS opinion under *Daubert*, and the Fourth Circuit never reviewed the District Court's exclusion of that opinion.

STATEMENT

A. Factual Background

In December 1991, during the course of a pipeline shipment from a petroleum distribution terminal in Fairfax, Virginia, aviation jet fuel or "AvJet" was accidentally spilled on the terminal property. (Pet. App. 27.) As the District Court acknowledged, AvJet is similar to common kerosere. (Pet. App. 30, 46, 47, 52 and 61.) Petitioner alleged that Star was responsible for the spill.

Petitioner contends that she was walking with her husband through a shopping mall parking lot near the terminal at the time of the AvJet spill, which occurred around midnight. (Pet. App. 26.) Petitioner presented testimony of an air-modeler who opined that the maximum "worst case" concentration of AvJet or kerosene vapors from the spill in the area of the parking lot was 61 mg/m^3. (Pet. App. 27.) Thus,

Petitioner alleged that she was exposed to AvJet vapors at a concentration of 61 mg/m^3 for a period of five to thirty minutes while walking through a parking lot. (Pet. App. 26, 42.) Although there is evidence that Petitioner was not in the parking lot at the time of the spill, Star accepted Petitioner's allegation of exposure for purposes of summary judgment proceedings in the District Court.

Petitioner claimed that her alleged brief exposure to a low level of AvJet vapors caused her to develop chronic conjunctivitis, sinusitis and obstructive pulmonary disease. (Pet. App. 29.) In an effort to prove that alleged exposure to AvJet vapors was the medical cause of her claimed injuries, Petitioner proffered the opinions of two proposed experts: Dr. David Monroe, a toxicologist, and Dr. Joseph A. Bellanti, a physician. Dr. Monroe opined that Petitioner suffered from "a variety of irritant effects from exposure to petroleum hydrocarbon vapors from the Fairfax Terminal site." (Pet. App. 38.) Dr. Bellanti prepared a report which stated that Petitioner had "chronic sphenoid sinusitis" and "pulmonary dysfunction." (Pet. App. 54.)

As the District Court noted, Dr. Monroe and Star's toxicology expert, Dr. Joseph Rodericks, agreed on the proper methodology that a toxicologist should follow in determining whether exposure to certain substances could cause a particular adverse effect. (Pet. App. 42.) Petitioner summarized the methodology in a submission to the District Court in which she noted that Star's expert had accurately described the proper methodology:

> The methodology of a toxicologist is explained by Dr. Joseph Rodericks, defendants' own toxicologist, and confirmed in his own report in this case. He writes that a toxicologist relies on certain scientific principles and uses particular scientific methods in forming his opinion on whether exposure to certain chemicals can adversely affect the health of an individual. ([Rodericks] Report at 2.) . . . The scientific methodology begins when the toxicologist evaluates the chemicals and the concentrations of chemicals to which the individual was exposed. He then consults the published scientific literature and determines the level of exposure necessary to produce the particular adverse effects associated with those chemicals. Finally, the toxicologist estimates the likelihood that such an exposure to any or all of these chemicals could produce the symptoms from which the individual suffers. ([Rodericks] Report at 2-3.)

(Plaintiff's Opposition to Motion in Limine at 9-10.)

Dr. Rodericks explained that this "dose-response" methodology has been endorsed by the World Health Organization, the National Academy of Sciences, the U.S. Environmental Protection Agency and the U.S. Food and Drug Administration. (Pet. App. 41.) The District Court correctly described both the "dose-response relationship" and the critical part it plays in the toxicologist's evaluation of causation:

> As Dr. Rodericks explains, all chemicals can cause health problems at some level or concentration of exposure, but they vary widely in the types of harm caused and in the levels of exposure required to trigger those harms. In addition, all chemicals have thresholds of exposure that must be exceeded before the harms will occur, and these thresholds may be identified through scientific studies and literature. The task of the toxicologist, therefore, is to identify a dose-response relationship for a particular chemical (or chemical mixture) and illness and analyze the results to determine whether the duration and concentration of exposure in a given instance could have caused the alleged harms.

(Pet. App. 41-42.)

Despite the agreement on the proper methodology, neither of Petitioner's experts adhered to that methodology.

Dr. Monroe opined that Petitioner became "sensitized" to petroleum hydrocarbons as a result of her alleged exposure to AvJet vapors. He opined that the alleged exposure caused her to sustain chronic conjunctivitis and sinusitis (Petitioner and her other expert alleged that she sustained chronic obstructive pulmonary disease also, but Dr. Monroe stated that he could not opine that the pulmonary condition was caused by the alleged exposure). (Pet. App. 29.) Dr. Monroe's report and deposition testimony revealed that he failed to follow the proper scientific methodology for reaching an opinion on causation, and that his opinion lacked scientific support: he failed to

consider the dose-response relationship that is critical to a valid toxicological opinion; he did not know whether the particular exposure alleged in this case was sufficient to cause any adverse effect, let alone the specific conditions that Petitioner alleged; he admitted that he did not even know what threshold level of exposure to AvJet vapors would be necessary to trigger any adverse reaction; he could not find any scientific studies or literature to show any connection between AvJet and the conditions Petitioner alleged; and the only studies he could identify that he said supported his opinion did not concern AvJet, nor did they concern the sort of chronic conditions Petitioner alleged. (Pet. App. 42-54.)

Dr. Bellanti is not a toxicologist, but as the District Court correctly noted, "he must nonetheless apply the principles and methods of toxicology if he is to give an opinion on an issue relating to that specialty." (Pet. App. 59, citing *Wade-Greaux v. Whitehall Laboratories, Inc.*, 874 F. Supp. 1441, 1481 (D.V.I.), *aff'd*, 46 F.3d 1120 (3d Cir. 1994).)

Dr. Bellanti submitted a report stating that Petitioner suffered from "chronic sphenoid sinusitis" and "pulmonary dysfunction." (Pet. App. 54-55.) He admitted during his deposition, however, that he could not opine that these illnesses were caused by vapors from the AvJet spill. Moreover, like Dr. Monroe's deposition testimony, Dr. Bellanti's testimony showed that he failed to follow the proper scientific methodology for reaching an opinion on causation, and that his opinion lacked scientific support: he admitted that he did not know the intensity or duration of the alleged exposure; he admitted that knowing the

threshold level of exposure necessary to cause injury was essential, but he did not know the threshold level of AvJet vapors necessary to cause injury; and he admitted that he had not found any scientific studies or literature to support a causal relationship between Petitioner's alleged injuries and the claimed exposure to AvJet vapors. (Pet. App. 59-63.)

B. Proceedings Below

Petitioner filed her Complaint in the District Court in November 1994. (Pet. App. 70.) Star moved to dismiss in December 1994. In January 1995, the District Court granted the motion to dismiss Counts II, III and IV, but denied the motion on Count I, which asserted Petitioner's claim for personal injuries allegedly caused by the AvJet spill. (Pet. App. 69-73.)

The parties engaged in extensive discovery. In May 1995, Star moved in limine to exclude Petitioner's putative experts on medical causation, and also moved for summary judgment. After briefing by all parties and a hearing on the motions, the District Court granted Star's motion in limine and the motion for summary judgment. (Pet. App. 66.) The District Court excluded the testimony of Petitioner's proffered experts and held that Star was entitled to summary judgment on her claim for alleged chronic injuries. The District Court noted that the parties agreed on the proper scientific methodology the experts were required to follow, but it held that the expert testimony Petitioner proffered on causation was inadmissible because her experts did not follow the proper scientific methodology in forming their opinions. (Pet. App. 63.)

The District Court invited Petitioner to move for reconsideration if she believed she had pled and could prove a claim for "immediate and temporary effects of irritated eyes and runny nose on the night of the [AvJet] spill." (Pet. App. 65.) Petitioner moved for reconsideration, but she did not assert a claim for "immediate and temporary effects." Instead, she submitted with her motion a new affidavit from Dr. Bellanti, which stated that he had performed additional medical tests on Petitioner after the motions in limine and for summary judgment were granted, and he offered for the first time a new "diagnosis" that all of Petitioner's ailments constitute a condition not previously alleged, known as RADS. (Court of Appeals App. 1812-1816.) The District Court denied the motion for reconsideration, and allowed Petitioner an additional 10 days to move again if she chose to assert a claim for immediate effects of the AvJet spill, if any. (Pet. App. 76-78.) Petitioner did not move for reconsideration again.

Petitioner appealed to the Fourth Circuit arguing that the District Court erred in dismissing Counts II, III and IV, erred in excluding the expert testimony, and erred in granting summary judgment in favor of Star on Count I. The Fourth Circuit affirmed the District Court's decision to exclude the expert testimony and to grant summary judgment on Petitioner's claim for personal injuries due to her alleged exposure to AvJet vapors. Specifically, the Fourth Circuit found that the District Court did not abuse its discretion in excluding the expert testimony.

MISSTATEMENT IN THE PETITION

In accordance with Supreme Court Rule 15.1, Star points out the following misstatement of fact in the Petition that bears on what issues properly would be before the Court if certiorari were granted.

On pages 2-3, the Petition states: "Ultimately, [Petitioner] was diagnosed with Reactive Airways Disfunction [sic] Syndrome ('RADS'), a medically recognized condition which creates a heightened sensitivity to chemicals, and which is caused by an initial 'insult' or exposure to high concentrations of chemicals, such as those in petroleum products." As noted, however, Petitioner was not diagnosed with RADS until after the District Court excluded the expert opinions Petitioner proffered and granted summary judgment in favor of Star. It was not until Petitioner moved for reconsideration of the orders excluding the testimony of her experts and granting summary judgment that she advanced this new "diagnosis." The District Court properly denied the motion for reconsideration without determining whether the new "diagnosis" would have been admissible under *Daubert* if it had been presented timely. (Pet. App. 76-78.)

The Petition indicates that the Fourth Circuit applied an abuse of discretion standard to a ruling under *Daubert* that excluded an opinion that the Petitioner had RADS. That is not so. The testimony that the District Court excluded under *Daubert* consisted of the opinions that the alleged exposure to AvJet vapors caused Petitioner to suffer sinusitis, conjunctivitis and pulmonary disease -- opinions that Petitioner does not advance in this Court. Her brief to

the Fourth Circuit challenged the District Court's application of *Daubert* to her experts' opinions, and not its refusal to grant the motion for reconsideration that presented the RADS diagnosis. Consequently, neither the District Court nor the Fourth Circuit ever had cause to apply *Daubert* to the "diagnosis" of RADS.

REASONS FOR DENYING THE WRIT

I. THE ISSUE ON WHICH PETITIONER SEEKS REVIEW WAS NOT PRESENTED TO OR RULED UPON BY THE FOURTH CIRCUIT

The Petition states that "[u]ltimately, [Petitioner] was diagnosed with Reactive Airways Disfunction [sic] Syndrome ('RADS'), a medically recognized condition which creates a heightened sensitivity to chemicals, and which is caused by an initial 'insult' or exposure to high concentrations of chemicals, such as those in petroleum products." (Petition at p. 2-3.) This is the only medical or toxicological opinion mentioned in the Petition.

As explained earlier, this opinion was submitted to the District Court for the first time as part of Petitioner's motion for reconsideration, filed eight days after the District Court granted summary judgment for Star. Petitioner had previously claimed, and her experts had testified, that her alleged exposure to AvJet vapors caused her to develop different conditions, which Petitioner does not so much as mention in her Petition in this Court: chronic conjunctivitis, sinusitis and pulmonary disease.

The District Court had no cause even to consider the new opinion on RADS presented in the motion for reconsideration. New evidence that a moving party produces in support of a motion for reconsideration under Rule 59(e) must necessarily be evidence that the party could not have obtained prior to the entry of judgment. *See RGI, Inc. v. Unified Indus.*, 963 F.2d 658, 662 (4th Cir. 1992); *see also French v. King*, No. 93-1504, 1993 U.S. App. LEXIS 33537, at * 5-* 6 (4th Cir. Dec. 23, 1993). The District Court correctly denied the motion.

Moreover, Petitioner did not argue in her brief submitted to the Fourth Circuit that the District Court was wrong in denying the motion for reconsideration. She merely argued, as she asserts in the Petition, that she was diagnosed as suffering from RADS and that the District Court improperly excluded her experts' opinions on medical causation.

The Petition in this Court is at best inaccurate. Petitioner argues that the Fourth Circuit applied an improper standard of review in affirming the exclusion of the opinion that she suffers from RADS. She contends that the Fourth Circuit reviewed the exclusion of that opinion under the abuse of discretion standard, and that a different standard should apply to the exclusion of expert testimony under *Daubert*. As explained already, however, the District Court did not exclude under *Daubert* the opinion that Petitioner suffers from RADS, nor did the Fourth Circuit consider whether the RADS opinion was properly excluded under *Daubert*. There is therefore no basis for this Court to grant certiorari to consider the question Petitioner presents, as that question was not presented or decided below.

To the extent the courts below rejected the opinion that Petitioner suffered RADS, they did so because that opinion was presented in a motion for reconsideration that the District Court denied. There is no doubt that the proper standard of appellate review of the denial of a motion for reconsideration is the abuse of discretion standard.[1] Petitioner does not contend otherwise. Thus, contrary to the Question Presented in the petition, this case does not present a justiciable controversy over the proper standard of appellate review.

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1 *See United States v. Roberts*, 978 F.2d 17, 20 n. 5 (1st Cir. 1992) (denial of a motion for reconsideration is reviewable for abuse of discretion); *Kotlicky v. United States Fidelity & Guar. Co.*, 817 F.2d 6, 8 (2d Cir. 1987) (same); *Kiewit E. Co. v. L&R Constr. Co.*, 44 F.3d 1194, 1204 (3d Cir. 1995) (same); *Transportation, Inc. v. Mayflower Servs., Inc.*, 769 F.2d 952, 954 (4th Cir. 1985) (same); *Weems v. McCloud*, 619 F.2d 1081, 1098 (5th Cir. 1980) (same); *Huff v. Metropolitan Life Ins. Co.*, 675 F.2d 119, 123 (6th Cir. 1982) (same); *Billups v. Methodist Hosp.*, 922 F.2d 1300, 1305 (7th Cir. 1991) (same); *Roudybush v. Zabel*, 813 F.2d 173, 178 (8th Cir. 1987) (same); *Walker v. Bank of Am.*, 268 F.2d 16, 25 (9th Cir.), *cert. denied*, 361 U.S. 903 (1959) (same); *Committee for First Amendment v. Campbell*, 962 F.2d 1517, 1524 (10th Cir. 1992) (same); *Gonzales v. Garner Food Servs., Inc.*, 89 F.3d 1523, 1525 (11th Cir. 1996), *petition for cert. filed* (Mar. 12, 1997) (same); *Firestone v. Firestone*, 76 F.3d 1205, 1208 (D.C. Cir. 1996) (same).

II. UNDER ANY STANDARD OF REVIEW, PETITIONER'S PROPOSED EXPERT TESTIMONY WAS PROPERLY EXCLUDED

The Petition presents the single question of "[w]hether in reviewing the district court's application of [*Daubert*] to exclude expert scientific testimony, the Fourth Circuit erroneously applied the . . . abuse of discretion standard of review." (Petition at I.) In this case, the Court need not consider whether the abuse of discretion standard is appropriate. Regardless of what standard of review should apply to decisions excluding expert testimony under *Daubert*, the District Court's decision to exclude the expert testimony in this case was properly affirmed.

Where, as here, undisputed evidence shows that the experts failed to follow the scientific methodology that all parties agree is the proper methodology, the experts' opinions must be excluded and the exclusion must be affirmed under any standard of review. *Cf. In re Paoli R.R. Yard PCB Litig.*, 35 F.3d 717, 745 (3d Cir. 1994) (*"any* step that renders the analysis unreliable under the *Daubert factors renders the expert's testimony inadmissible. This is true whether the step completely changes a reliable methodology or merely misapplies that methodology"*; emphasis in original), *cert. denied*, 115 S. Ct. 1253 (1995).

Star submits that abuse of discretion is the proper standard for *Daubert* rulings. Regardless, since the rulings in this case were correct under any standard, the Court should not grant certiorari in this case to consider what the appropriate standard of review should be.

III. THIS CASE IS NOT SIMILAR TO *JOINER V. GENERAL ELECTRIC CO.*

Petitioner contends that this case presents the same question that is presented in a case in which the Court recently granted certiorari, *Joiner v. General Electric Co.*, 78 F.3d 524 (11th Cir. 1996), *cert. granted*, No. 96-188 (Mar. 17, 1997). Petitioner urges that the Court consolidate this case with *Joiner* or hold this case pending disposition of *Joiner*. Star disagrees and respectfully requests that the Court deny certiorari in this case, which is distinctly different from *Joiner*.

The *Joiner* case presented the question of what appellate standard of review should apply to decisions excluding expert testimony under *Daubert*. For all the reasons explained already in this brief, this case does not properly present that question. The testimony that Petitioner contends was improperly excluded in this case, namely the RADS diagnosis, was not excluded under *Daubert*. Thus, the question presented in *Joiner* about the review of *Daubert* decisions is wholly distinct from the real question presented in this case, which is simply whether the Fourth Circuit erred in affirming the denial of Petitioner's motion for reconsideration that included the RADS diagnosis.

Moreover, even if this case properly presented the question of whether the Fourth Circuit applied the correct standard to the rulings excluding testimony under *Daubert*, this case is sufficiently different from *Joiner* that it should not be consolidated with *Joiner* or held pending the disposition of that case. In *Joiner*, the Eleventh Circuit applied a more stringent standard of

review to *Daubert* decisions than the abuse of discretion standard that ordinarily applies to evidentiary rulings, and it reversed a decision to exclude evidence under *Daubert* pursuant to the unusually strict standard. By contrast, the Fourth Circuit in this case affirmed a ruling under *Daubert* applying the ordinary abuse of discretion standard. For these and many other reasons, the differences between this case and *Joiner* far exceed any similarities.

IV. THE FOURTH CIRCUIT APPLIED THE CORRECT STANDARD OF REVIEW

As the Petition points out, this Court held thirty-five years ago that the Courts of Appeals are to use an abuse of discretion standard to review the admission or exclusion of expert testimony. *Salem v. United States Lines Co.*, 370 U.S. 31 (1962). The Fourth Circuit is part of the overwhelming majority of Courts of Appeal that have followed this Court's ruling in *Salem* and have accorded deference to the district courts in their evidentiary rulings on expert testimony. *See, e.g., United States v. Shay*, 57 F.3d 126, 132 (1st Cir. 1995); *United States v. Daccarett*, 6 F.3d 37, 58 (2d Cir. 1993), *cert. denied*, 510 U.S. 1191 and 114 S. Ct. 1538 (1994); *Rosado v. Deters*, 5 F.3d 119, 124 (5th Cir. 1993); *American & Foreign Ins. Co. v. General Elec. Co.*, 45 F.3d 135, 137 (6th Cir. 1995); *Bradley v. Brown*, 42 F.3d 434, 436-37 (7th Cir. 1994); *Gier v. Educational Serv. Unit No. 6*, 66 F.3d 940, 944 (8th Cir. 1995); *Lust v. Merrell Dow Pharm., Inc.*, 89 F.3d 594, 597 (9th Cir. 1996); *United States v. Davis*, 40 F.3d 1069, 1073 (10th Cir. 1994), *cert. denied*, 115 S. Ct. 1387 and 1806 (1995).

Decisions on the admissibility of expert testimony should be subjected to a deferential standard such as the abuse of discretion standard for a host of reasons, including the following:

- A district court is in a better position than an appellate court to determine the reliability of an expert's opinion, as required by *Daubert*, and thus a district court ruling on the admissibility of such an opinion is entitled to deference.

- Rulings on the admissibility of expert opinions frequently require a thorough review of scientific literature to determine whether the opinions have a basis in science. If courts of appeals were required to repeat that sort of review whenever a party appeals from such a ruling, it would add an undue burden to the appellate process.

- Rulings on the admissibility of expert opinions are only occasionally outcome dispositive. To the extent that such rulings affect merely the quantum of evidence admitted, the rulings do warrant a particularly stringent review on appeal.

- The abuse of discretion standard has applied to rulings on the admissibility of expert testimony for many years. There is no cause to change this time-tested standard.

CONCLUSION

For the foregoing reasons, the petition for writ of certiorari should be denied.

Respectfully submitted,

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In The

Supreme Court of the United States

October Term 1996

ARDITH CAVALLO,

Petitioner,

v.

STAR ENTERPRISE; TEXACO REFINING AND MARKETING (EAST), INCORPORATED; SAUDI REFINING, INC.,

Respondents.

ON PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FOURTH CIRCUIT

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I. THE QUESTION PRESENTED IN OUR PETITION IS PROPERLY BEFORE THE COURT

Respondents' contention that this case does not present the question of the standard of review applicable to district court *Daubert* rulings is incorrect. Respondents are totally confused, or they have made an outright misrepresentation, hoping that the Court will be confused.[1] *See* Br. at 8 ("Fourth Circuit affirmed the District Court's decision to exclude the expert testimony and to grant summary judgment"), and, *infra*, p.3. By Respondents' own admission our statement (Pet. at 2-3) that "[u]ltimately [Mrs. Cavallo] was diagnosed with Reactive Airways D[y]sfunction Syndrome (`RADS')" is true. They admit (Br. at i, 8, 9, 10) that the diagnosis was made.

In an effort to discredit our Petition, Respondents imply that we represented that the ultimate RADS diagnosis had been made at the time the district court excluded the testimonies of Petitioner's experts and granted summary judgment for Respondents. The Petition makes no such statement.[2]

The timing of the ultimate RADS diagnosis is neither

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[1] Respondents rely on Rule 15.1 of the Rules of this Court in bringing what they term a "misstatement" to the attention of the Court (Br. at 9). We assume Respondents intended to cite Rule 15.2.

[2] Respondents also seek to inject their view of the merits of this case, apart from the question of the standard of review applicable to district court *Daubert* rulings. For example, they state (Br. at 3) that "there is evidence that Petitioner was not in the parking lot at the time of the spill." Any such "evidence" is irrelevant to the issue properly presented to the Court by our Petition, and would have to be considered by the trier of fact. Furthermore, their suggestion (Br. at 5-7) that the experts did not attribute Petitioner's health problems to the AvJet spill is incorrect. *See* Pet. App. at 38, 55-56.

relevant nor material to the Petition.[3] Respondents simply are wrong when they state that "[t]he Petition indicates that the Fourth Circuit applied an abuse of discretion standard to review a ruling under *Daubert* that excluded an opinion that Petitioner had RADS" (Br. at 9). The medical evidence of causation of Mrs. Cavallo's illnesses, which included, *inter alia*, "obstructive pulmonary disease" (Br. at 3), was excluded by the district court because it found the methodologies of Drs. Bellanti and Monroe lacking. The Petition at 3-5 clearly and accurately states that the district court excluded the testimony of Dr. Joseph Bellanti, Mrs. Cavallo's treating physician, as to the effect of the 1991 AvJet spill upon her; that the district court excluded Dr. Bellanti's testimony because, though he is an internationally prominent allergist and immunologist who heads the Department of Allergy and Immunology at Georgetown Medical Center, he was, according to the district court, required to use toxicological methodology; that the district court found the methodology of Dr. Monroe, a toxicologist, flawed; that the district court's conclusions were based on its misinterpretation of *Daubert* in that it believed incorrectly that *Daubert* tightened the standards for admissibility of expert testimony; and that the court of appeals applied the most highly deferential abuse of discretion standard to affirm what it termed a "close" question, characterizing the district court's approach as "restrictive." What was and is at issue is the standard of review to be applied to the district court's evaluations of the experts' methodologies, not a particular diagnosis. The testimonies were excluded because of the district court's evaluation of methodologies, *not* the diagnosis. No matter what the

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[3] Of course, that diagnosis would be both relevant and material at a trial of this case. The ultimate RADS diagnosis was not made until after summary judgment because Dr. Bellanti did not want to give Mrs. Cavallo the final and definitive test since he considered it potentially life threatening.

diagnosis, the district court would have excluded the evidence because it found the methodologies to determine causation flawed (A. 61-62).[4] It is those determinations that were reviewed by the court of appeals utilizing an abuse of discretion standard of review, and affirmed based on its application of that highly deferential standard of review.

The Fourth Circuit's opinion is clear that it applied an abuse of discretion standard of review to the district court's exclusions of Mrs. Cavallo's experts' testimonies (A. 6-7, 16-21). The court of appeals did not even consider the question of whether the district court should have granted a motion for reconsideration. What was at issue there, and what is at issue here, is the standard of review applicable to the trial court's exclusions of the expert scientific testimonies of Drs. Bellanti and Monroe, which exclusions resulted in a summary judgment for Respondents. What was appealed, and what the court of appeals reviewed, was the exclusions of expert scientific testimonies that resulted in a summary judgment.

FRCP Rule 59(e) has nothing to do with this case, and the Petition is not based on the denial of a motion for reconsideration. *See* Br. at 8, stating, "Petitioner appealed to the Fourth Circuit arguing that the District Court . . . erred in excluding the expert testimony, and erred in granting summary judgment in favor of Star on Count I." Thus, Respondents themselves acknowledge that the appeal to the Fourth Circuit involved the summary judgment ruling, not the denial of the motion for reconsideration. In short, their own Brief contradicts their convoluted and grossly inaccurate contention that the Question Presented in our Petition is not properly before the Court.

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[4] "A." references are to the Appendix to our Petition.

II. THIS CASE AND *JOINER* PRESENT THE SAME MAJOR ISSUE

Respondents' Brief in Opposition does not challenge the conflict in the circuits, nor does it dispute the importance of the question presented in this case. Such a challenge would ring hollow as the Court, on March 17, 1997, granted the petition in *General Electric Co. v. Joiner*, No. 96-188.

Joiner states the Question Presented:

> What is the standard of appellate review for trial court decisions excluding expert testimony under *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993)?

Petitioner in this case states the Question Presented:

> Whether in reviewing the district court's application of *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), to exclude expert scientific testimony, the Fourth Circuit erroneously applied the most highly differential abuse of discretion standard of review.

Unable to present a legitimate reason for either denying *certiorari* or deferring a ruling on this Petition until after the decision in *Joiner*, Respondents present a less than specious, disingenuous argument (Br. at 14-15).[5]

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[5] Respondents inaccurately state (Br. at 14) that "Petitioner urges that the Court *consolidate* this case with *Joiner* . . ." (emphasis added). We asked that this case be considered with *Joiner*, or that a ruling on the Petition be withheld until *Joiner* is decided (Pet. at 1, 15).

> In *Joiner*, the Eleventh Circuit applied a more stringent standard of review to *Daubert* decisions than the abuse of discretion standard that ordinarily applies to evidentiary rulings, and it reversed a decision to exclude evidence under *Daubert* pursuant to the unusually strict standard. By contrast, the Fourth Circuit in this case affirmed a ruling under *Daubert* applying the ordinary abuse of discretion standard.

Thus, Respondents argue that because different circuits have disagreed as to the standard of review applicable to district court *Daubert* rulings, *certiorari* should be denied. Obviously, if different courts of appeals apply different standards of review, the results will be different in different cases. Where such conflicts exist, the importance and identity of the question presented does not depend on the result reached by a particular court of appeals in a specific case. The circuit conflicts require resolution. Definition of the proper standard of review to be applied by the courts of appeals to district court *Daubert* rulings is not dependent on which standard is applied in any one case. Resolution of the conflicts is necessary, and it is fully appropriate that this case, in which a summary judgment for the defendants was affirmed because the Fourth Circuit applied the most highly deferential abuse of discretion standard of review to the district court's exclusion of expert scientific testimony, and *Joiner*, which applied a different and far less deferential standard of review to reverse a similar ruling by a district court, be considered together. *See* n.5, *supra*.

III. WHAT STANDARD OF REVIEW APPLIES SHOULD BE ADDRESSED WHEN THE MERITS ARE CONSIDERED

Similarly, Respondents' argument (Br. at 15) that the Court's decision in *Salem v. United States Lines Co.*, 370 U.S. 31 (1962), is a reason for denying *certiorari* does not withstand scrutiny. As stated, *supra*, the Court has agreed to consider *Joiner* on the merits. And, as pointed out in our Petition at 13-14, *Salem* was decided when the "general acceptance" standard stated in *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923), was the law, and was based on *Spring Co. v. Edgar*, 99 U.S. 645, 658 (1879), a case that "predates *Daubert* by well over a century" (Pet. at 6). It is for this very reason that it is appropriate to re-examine rules of law formulated long before the Federal Rules of Evidence even were contemplated.

Likewise, the reasons Respondents advance (Br. at 16) for a most highly deferential abuse of discretion standard of review of district court *Daubert* rulings go to the ultimate determination of the issue presented by *Joiner* and this case, not to the grant or denial of *certiorari* on a vitally important question with respect to which the circuits are in conflict. Accordingly, we do not address at this time the merits of a question the Court has agreed to hear.[6] Suffice it to say that

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[6] Respondents state (Br. at 3-5) that the parties agreed on the proper methodology to be followed by Petitioner's experts, and that Petitioner's experts did not adhere to that methodology. That is incorrect. While there may have been agreement on methodology with regard to Dr. Monroe, the record is clear that Petitioner argued below that proper methodology was followed. Thus, the district court opinion states that Mrs. Cavallo "contends that Dr. Monroe followed [the proper] methodology in reaching his conclusion" (A. 42). As to Dr. Bellanti, the district court stated that "it appears from a review of his written report as well as his deposition testimony that [Dr. Bellanti] applied primarily a methodology of differential diagnosis" (A.57). Petitioner contended Dr. Bellanti's

we disagree with Respondents' conclusions, and would argue on the merits, as we assume respondents in No. 96-188 will, that the abuse of discretion standard of review should not be applied to district court *Daubert* rulings, especially to exclusions that result in a summary judgment.

IV. EVEN UNDER THE ABUSE OF DISCRETION STANDARD OF REVIEW REVERSAL OF THE DISTRICT COURT WAS REQUIRED

At page 13 of their Brief, Respondents argue that under any standard of review the district court judgment required affirmance. Not only is that incorrect, but exactly the opposite is true. Under any standard of review, including abuse of discretion; as a matter of law reversal of the district court judgment in this case was required.

As stated, *supra*, and in our Petition, n.13 at 12-13, the district court based its rulings on an erroneous view of the law. It believed, erroneously, that *Daubert* tightened the requirements for admissibility of expert scientific evidence, and restricted admissibility of such evidence. This Court has stated unequivocally that a discretionary ruling based on an erroneous view of the law is an abuse of discretion. *Cooter & Gell v. Hartmarx Corp.*, 496 U.S. 384, 405 (1990). The district court's discretion was exercised based on an erroneous view that Daubert contemplated that expert scientific testimony admissible under *Frye's* "general acceptance" standard henceforth could be excluded. That simply is not correct, and a decision based on that erroneous view of the law

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methodology was proper.

In any event, the district court's determination as to admissibility was reviewed by the court of appeals only for abuse of discretion. Whether the review should have been more searching is the issue presented both by this case and *Joiner*.

is, under *Cooter & Gell*, an abuse of discretion mandating reversal.

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(4)

No. 96-1493

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In The
Supreme Court of the United States

October Term 1996

ARDITH CAVALLO,

Petitioner,

v.

STAR ENTERPRISE; TEXACO REFINING AND MARKETING (EAST), INCORPORATED; SAUDI REFINING, INC.,

Respondents.

ON PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FOURTH CIRCUIT

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On October 20, 1997, the United States Court of Appeals for the Fifth Circuit issued its decision in *Moore v. Ashland Chemical, Inc.*, No. 95-20492.[1]

Moore presents a further important conflict with the Fourth Circuit's decision in this case (A.1-22),[2] which upheld the district court's exclusion of the testimony of Mrs. Cavallo's internationally prominent treating physician, Dr. Joseph Bellanti, head of the Department of Allergy and Immunology at Georgetown Medical Center. Specifically, *Moore* holds that a treating physician's testimony as to causation of an illness is not subject to the *Daubert*[3] factors applicable to "hard science." Thus, even applying a highly deferential abuse of discretion standard of review, the Fifth Circuit reversed the exclusion of a treating physician's testimony, based on clinical procedures and differential diagnosis.[4]

The facts in *Moore* are strikingly similar to those in the instant case. Moore was exposed to vapors from a mixture of spilled chemicals. Thereafter, he became ill and was diagnosed with Reactive Airways Dysfunction Syndrome ("RADS"), a disease that can be caused by "any chemical with irritating properties . . . in a person who is capable of responding in that way" (Slip. Op. at 508). [5] A

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[1] Twelve (12) copies of the Opinion have been lodged with the Clerk. The case is reported at 126 F.3d 679.

[2] "A." references are to the Appendix to our Petition.

[3] *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993).

[4] The defense judgment in *Moore* was a jury verdict rather than summary judgment. Reversal was based on the Fifth Circuit's conclusion that the exclusion was not "harmless error" and that "substantial rights" likely were affected. Slip Op. at 520-521.

[5] Mrs. Cavallo was diagnosed with "obstructive pulmonary disease" longer after the exposure than Moore, and the ultimate RADS diagnosis came later. *See* Reply to Br. in Op. at 2. These differences may go to the weight of the testimony. They do not affect admissibility.

treating physician proposed to testify that the exposure to the spilled chemicals caused Moore's illness. He could not state the precise level of exposure or cite studies. The district court refused to admit the testimony.[6]

Unlike the district court in this case, which ruled (affirmed by the Fourth Circuit (A. 20-21)) that the methodology of a treating physician is to be evaluated by the factors applicable to determining the reliability of "hard science", the Fifth Circuit concluded (Slip Op. at 493, numbers in parentheses omitted):

> clinical medicine (as opposed to research and laboratory medical science) is not a hard science discipline; its goals, subject matter, conditions of study and well developed methodology are sui generis and quite different from that of hard science and its methodology; consequently, a trial judge assessing the reliability of the proffer of a clinical physician's expert testimony based on clinical medical knowledge should determine whether it is soundly grounded in the knowledge, principles and methodology of clinical medicine; the "*Daubert* factors," which are techniques derived from hard science methodology, are, as a general rule, inappropriate for use in making the reliability assessment of expert clinical medical testimony.

See Slip Op. at 500-502, 507-512, 516-518, 522-524. *But see* Slip Op. at 527-529 (dissenting opinion), citing, *inter alia* (at 528), the Fourth Circuit's decision in this case.

Contrary to the Fifth Circuit, the Fourth Circuit in this case held that the district court could validly require that clinical medicine must be proven reliable by use of

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[6] The chemicals in the mixture included some of the same chemicals involved in the spill in this case. *See* A. 42 and Slip Op. at 506.

methodologies applicable to hard science. *See* A. 19-21 (Fourth Circuit); A. 33-34, 54-63 (district court). The Fifth Circuit majority clearly is correct, particularly where there is highly reputable and credible medical testimony that to determine that chemicals caused an illness, knowledge of the precise exposure level is unnecessary. As we stated in our Petition at 7n.9, the Fourth Circuit's decision in this case conflicts even with other Fourth Circuit authority. *See* Slip Op. at 519, citing *Benedi v. McNeil-P.P.C.,Inc.*, 66 F.3d 1378, 1383 (4th Cir. 1995). *See* also Brief *Amicus Curiae* of Ardith Cavallo in *General Electric Co. v. Joiner*, No. 96-188, at 17-19.[7]

In sum, *Moore* presents and highlights important circuit conflicts, and provides additional reasons to grant *certiorari* and reverse the Fourth Circuit's decision in this case. That is so regardless of the standard of appellate review applicable to district court *Daubert* rulings. While we believe the Fourth Circuit erroneously applied an incorrect standard of review, even if it used a correct standard, it applied that standard in an erroneous manner.

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[7] The *amicus* brief has been furnished to counsel for Respondents.

No. 96-1493

(5)

Supreme Court, U.S.
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In The
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ARDITH CAVALLO,

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ON PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FOURTH CIRCUIT

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3 pp

This Court's December 15, 1997 decision in *General Electric Co. v. Joiner,* No. 96-188, disposes only partially of the Petition in this case. It answers only one of the issues included within the Question Presented in the Petition (Rule 14.1(a)), namely whether the Fourth Circuit applied a correct standard of review. The decision does not address whether the Fourth Circuit applied that standard of review in an erroneous manner. That unanswered question is of substantially equal importance and should be considered by this Court.

At issue, *inter alia,* is whether the Fourth Circuit erroneously applied the abuse of discretion standard of review to exclude the testimony of Dr. Joseph Bellanti, Mrs. Cavallo's treating physician. The Fourth Circuit affirmed as a proper exercise of discretion the trial court's exclusion of Dr. Bellanti's testimony as to the cause of Mrs. Cavallo's illness, holding that clinical medical testimony is subject to evaluation for admissibility by the same standards applicable to "hard science." This is an important issue with respect to which there are both conflicts and confusions in the circuits. *See Moore v. Ashland Chemical, Inc.*, 126 F.3d 679 (5th Cir. Oct. 20, 1997), *rehearing in banc ordered* Nov. 12, 1997[1] (Slip Op. at 516-519 (majority opinion), 527-529 (dissenting opinion)).[2]

While epidemiological evidence of causation for conditions such as cancer (*see Joiner, supra*) usually may be required before a treating physician may testify that substance exposure caused a plaintiff's disease, such evidence is unnecessary as the foundation of a treating physician's testimony that a particular incident (in this case exposure to chemicals admittedly having irritant properties) caused a reactive syndrome which can be triggered only by exposure to chemicals with irritating properties. *See* Pet. at 2-3; Reply to Br. in Op. at 1-3. That is so because the reactive sensitivity of

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[1] The *in banc* hearing in *Moore* is scheduled for January 20, 1998.

[2] Twelve (12) copies of the Fifth Circuit's Slip Opinion were submitted on December 4, 1997, with our Supplemental Brief.

a particular individual almost never will be the subject of an epidemiological study. In such case, the causation testimony of a clinical physician is the most scientifically sound, most reliable, and usually only scientific evidence available.

It is a well established rule of law that a defendant "takes the plaintiff as he finds him." A negligent defendant cannot defend on the ground that the plaintiff was hypersusceptible to the injury the negligence caused. Studies involving levels of exposure thus, in most instances, are not critical, and may even be irrelevant. To require, as the Fourth Circuit did in this case, epidemiological studies before a physician may testify to the etiology of a medically recognized reactive disease, which can be caused only by a chemical "insult" or "assault" like exposure to fumes from 34,000 gallons of spilled jet fuel, is contrary to long and well established tort law principles.

The above-discussed issue in this case is important and recurring. There is conflict and confusion in the circuits, making review by this Court imperative as a clarifying follow-up to *Joiner*.[3]

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[3] We stated in the Petition (n.13 at 12-13) that the district court abused its discretion because it based its decision on an incorrect understanding of *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993). While it is unlikely we would have sought *certiorari* for that reason alone, we do not abandon that argument and other related arguments.